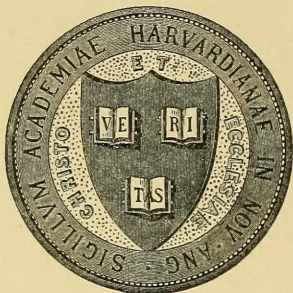




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Some Venezuelan Mollusks

By
FLOYD HODSON
and
HELEN K. HODSON

October 1, 1931

Harris Co.
Ithaca, N. Y.
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SOME VENEZUELAN MOLLUSKS

By

FLOYD HODSON
and
HELEN K. HODSON

INTRODUCTION

The Venezuelan collections upon which this article is based were made for an American company operating in South America. The localities for our Venezuelan holotypes described in this and previous articles are given herewith, but the formations in which the species are found are withheld at present to protect the company's interests. It is hoped that formations, geographic distribution and stratigraphic ranges may be given when the company's interests permit.

The types are deposited in the collections of Prof. G. D. Harris at the Paleontological Museum of Cornell University, Ithaca, N. Y.

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VENEZUELAN HOLOTYPE LOCALITIES

(Additional holotype localities are given in the text of the present article.)

- No. 6 Oil seep at Mene de Saladillo, 1.5 kilometers southwest of Quirós, District of Miranda, State of Zulia.
- 52 Quebrada Santiago, south of Dabajuro, District of Buchivacoa, State of Falcón.
- 59 Limestone ridge between Quebrada Santiago and Río Cauredalito, District of Buchivacoa, Falcón.
- 69, 70A, 72, 82, 86, 90, 93 Around Urumaco, near boundary of Districts of Democracia and Miranda, Falcón.
- 115 118, 123, 127, 131, 138C, 140, 154, 155, 180, 185, 196, 197 Around Buena Vista structure between La Vela de Coro and Taratara, District of Colina, Falcón.
- 224 West of Río Coro, at Caujarao, south of Coro, District of Miranda, Falcón.
- 298, 304 Butiare, southwest of La Vela de Coro, District of Colina, Falcón.
- 339, 341 Northwest foot of Mesa de Saladillo, southwest of Coro, District of Miranda, Falcón.
- 526 Harbor at Castilletes, District of Paez, Zulia.
- 815 On trail between Baragua and Carora, southwest of San Cristóbal, District of Torres, Lara.
- 1021, 1033 Buena Vista structure between La Vela de Coro and Taratara, District of Colina, Falcón.
- 1070 Punta Soldado, Curamichate, District of Acosta, Falcón.
- 1159K Near La Planchada, southeast of Dabajuro, District of Buchivacoa, Falcón.
- 1217 Río Cauredalito, south of Dabajuro, District of Buchivacoa, Falcón.
- 1233 About 10 kilometers a little north of east of Urumaco, on road to Sabaneta, District of Miranda, Falcón.
- 1255 Equals Coll. No. 185.
- 1334 South of Chiparita, southeast of La Vela de Coro, District of Colina, Falcón.
- 1353 East end of point at Sabanas Altas, District of Zamora, Falcón.
- 1504 Adaro Point, southwest part of Paraguaná Peninsula, District of Falcón, Falcón.
- 1552 Guaibacoa, southeast of La Vela de Coro, District of Colina, Falcón.
- 1737 Agua Clara, District of Democracia, Falcón.
- 1753 North side of Quebrada Oliva, northwest of Agua Clara, District of Democracia, Falcón.
- 1757 Cerro Verde, south of Dabajuro and northeast of Cauredalito, District of Buchivacoa, Falcón.
- 1761 Río El Mene, southeast of La Planchada (southeast of Dabajuro), District of Buchivacoa, Falcón.
- 1848, 1855, 1866, 1886 Around Cuji, southeast of Urumaco and north-northwest of Agua Clara, near boundary of Districts of Miranda and Democracia, Falcón.
- 1928 San Raphael, south of Urumaco, District of Democracia, Falcón.
- 1938 At south foot of Cerro Guaratara, on trail from Yavalito to La Montañita, District of Buchivacoa, Falcón.
- 1939 Cerro La Montañita, 25 kilometers east and 9 kilometers south of Dabajuro, District of Buchivacoa, Falcón.
- 1957 At Saladillo, on trail from Dabajuro to Camare (southeast of Dabajuro), District of Buchivacoa, Falcón.
- 1967 Just southwest of La Fila del Carmen, east-southeast of Dabajuro, District of Buchivacoa, Falcón.

- 1979, 1987 El Carmen, east-southeast of Dabajuro, District of Buchivacoa, Falcón.
- 2005, 2019, 2027 In and north of Quebrada Santiago, south of Dabajuro, District of Buchivacoa, Falcón.
- 2040 Quebrada Yaruma, near Cerro Verde, south of Dabajuro, District of Buchivacoa, Falcón.
- 2048 East of Cerro Verde, on trail from Quebrada Santiago to Dabajuro, District of Buchivacoa, Falcón.
- 2050 Quebrada La Salvación, near Cerro Calón, on trail leading from La Planchada, southeast of Dabajuro, District of Buchivacoa, Falcón.
- 2187 El Alambre, near La Planchada, southeast of Dabajuro, District of Buchivacoa, Falcón.
- 2207 Cantaura, Cocodito (or Cocodite) area, Paraguaná Peninsula, District of Falcón, Falcón.
- 2216 In Río Asagua, just north of camino real, north of Maturín, District of Piar, Monagas.
- 2220 Quebrada del Mene, west of Machiques, southwest of Maracaibo, District of Perijá, Zulia.
- 2267 Quebrada de las Palmas, south of Dabajuro, District of Buchivacoa, Falcón.
- 2278 South of La Danta, on trail between Seco Perro and Camuruquito, south of Dabajuro, District of Buchivacoa, Falcón.
- 2391 East of Guayubo, south of La Danta, south of Dabajuro, District of Buchivacoa, Falcón.
- 2394 Camuruquito, north of Cauredalito, south of Dabajuro, District of Buchivacoa, Falcón.
- 2410 Cerro Chiriguare, southwest of Dabajuro, District of Buchivacoa, Falcón.
- 2420 Cerro de los Tirantes, north of Guariro, southeast of Dabajuro, District of Buchivacoa, Falcón.
- 2426 Loma de Aviagua, south of Santa Cruz, southeast of Dabajuro, District of Buchivacoa, Falcón.
- 2436 Between Aviagua and Guariro, southeast of Dabajuro, District of Buchivacoa, Falcón.
- 2447 Between Aviagua and Los Tirantes, southeast of Dabajuro, District of Buchivacoa, Falcón.
- 2490A Quebrada de Uca, southeast of El Mene, Western Buchivacoa, Falcón.
- 3222 About 5 kilometers southwest of Quirós, District of Bolívar, Zulia.
- 3249 Headwaters of Río Tamare, about 8 kilometers southwest of Quirós, District of Bolívar, Zulia.
- 3250 East of Quebrada La Mesa and north of Río Tamare, about 8 kilometers southwest of Quirós, District of Bolívar, Zulia.
- 3256 7.8 kilometers east and 1.3 kilometers south of Churugarita, District of Miranda, Zulia.
- 3265 2 kilometers south of Churugarita, District of Miranda, Zulia.
- 3268, 3312 Ridge at Churugarita, District of Miranda, Zulia.
- 3315 In pit, 2.25 kilometers east of Churugarita, District of Miranda, Zulia.
- 3317 In pit, 2.5 kilometers east and .3 kilometers south of Churugarita, District of Miranda, Zulia.
- 3514 Quebrada Agua Dulce, near La Planchada, southeast of Dabajuro, District of Buchivacoa, Falcón.
- 4609 Hills south of Casa de la Peña, just west of Quebrada de La Limpida, East Buchivacoa, Falcón.

DESCRIPTION OF SPECIES

Class PELECYPODA Goldfuss

Family PERIPLOMATIDÆ Dall

Genus PERIPLOMA Schumacher

Periploma venezuelana H. K. Hodson, n. sp. Pl. 1, figs. 1, 2, 6, 8.

The shell is somewhat nacreous, of medium size, plump, inequivalve, gaping posteriorly. The surface when well preserved is covered with fine granular sculpture. The right valve is fatter and neither valve is keeled anteriorly. The beaks are situated at about the posterior third of the shell. The posterior part of the shell is twisted to the right and carries a slight posteriorly directed fold from the beak to the ventral margin; this fold is more noticeable on the right valve. The anterior is rounded and produced. The chondrophore of each valve is directed anteriorly; its buttress extends from the chondrophore posteriorly and toward the ventral margin.

The specimens are rare and usually poorly preserved, due partly to the thinness of the shell.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 86, about 2.5 kilometers north and 500 meters east of Urumaco, District of Democracia, State of Falcón.

Periploma venezuelana wiedenmayeri H. K. Hodson, n. subsp.

Pl. 1, figs. 3, 5, 7.

The shell is of medium size, inequivalve, thin. The surface when well preserved is covered with fine granular sculpture. The anterior is twisted to the left, the posterior to the right. The left valve is almost flat; the right valve is fatter and keeled slightly anteriorly. The posterior is short and carries only a slight fold or keel. The posterior and basal margins are rounded, while the anterior and dorsal ones are angulated.

This subspecies is distinguished from *P. venezuelana* (n. sp.) by its right anterior keel, its thinness, and its shorter posterior. It is impossible to say whether the two forms are specifically distinct because of the poor preservation of the specimens.

Named in honor of Dr. C. Wiedenmayer.

Age.—Lower Middle Miocene.

Holotype Locality.—2 kilometers south and 600 meters east of La Compana, District of Democracia, State of Falcón. (La Compana is 11.5 kilometers east and 2 kilometers south of Urumaco.)

Family CYRENIDAE Gray

Genus CYRENA Lamarck

Cyrena falconensis H. K. Hodson, n. sp. Pl. 1, fig. 4; pl. 2, figs. 10, 11

The shell is small, high, trigonal, and variable. The beaks occur at about the anterior third of the shell, are full, high, and adjacent. The posterior is frequently weakly keeled. Occasionally, more elongated specimens are found with thinner shells and lower beaks; and, sometimes, heavier, rounder forms occur. Internally, the shell has 3 cardinals, double right laterals and single left laterals, which are not striated. Just below the posterior muscle scar is a narrow, pointed, sharply ascending, pallial sinus. The shell attains 36 mm. in length, but usually measures only 20 mm.

Age.—Upper and Upper Middle Miocene.

Holotype Locality.—Loc. 193, 1.5 kilometers east and 900 meters north of La Vela de Coro lighthouse, District of Colina, State of Falcón. (Also occurs in Districts of Colina, Democracia and Buchivacoa, Falcón.)

Family LUCINIDAE Fleming

Genus LUCINA Lamarck

Subgenus LUCINISCA Dall

Lucina (Lucinisca) mirandana F. Hodson, n. sp. Pl. 2, figs. 1 - 9.

The shell is small and thin; the anterior dorsal area has flatter, broader, and more widely spaced, radial ribs. The valves are somewhat inequilateral and bear concentric and radial sculpture; the younger stages show only concentric ribs; the radial ribs are at first very faint, but on the distal part of the valves, they become strong; occasionally, there is a tendency for some of the ribs to bifurcate, but usually the additional radials are intercalated; some imbrications are produced at the intersections of radial and concentric ribs; the ribbing on the anterior area is not prominent; on well preserved specimens, the concentric ribs form imbricate flanges on the dorsal edges of the posterior and

anterior areas; the posterior area is limited in front by a radial rib which is stronger, wider, and more imbricated than the other radials; in adult specimens, the posterior area contains a wide, poorly defined, radial rib. The inner margin is more or less crenulate in harmony with the external ribbing. The lunule is small, cordate, and deeply impressed.

Our larger specimens are 8.5 mm. in height, but the more common height is 5 mm. to 6 mm. This species is somewhat similar to *L. calhounensis* (Dall)¹ which is larger and has a more sloping anterior dorsal margin. *L. cercadica* (Maury)² has much more crowded, weaker, concentric ribs, especially in the younger stages.

Age.—Upper Oligocene.

Holotype Locality.—Loc. 6, Quirós, District of Miranda, State of Zulia.

Family VENERIDAE Leach

Genus PITARIA (Römer) Dall

Subgenus PITARIA s. s.

Pitaria buenavistana buchivacoana H. K. Hodson, n. subsp. Pl. 3, figs. 3, 5, 8

This subspecies is the Oligocene forerunner of the Miocene *P. buenavistana* H. K. Hodson³. The shell is typically smaller, measuring about 22 mm. in length; many specimens are still smaller, although some attain 30 mm. in length; this subspecies is thinner,—a specimen 22 mm. in length usually measures about 13 mm. in diameter (2 valves), while an immature Miocene form of the same length typically measures 16 mm. The lunule is large and rounded as in the species. The pallial sinus is narrow, ascending, and reaches almost to the center of the shell. The sculpture consists of concentric wrinkles. Occasionally, specimens are found in the Oligocene that are elongate, but otherwise like this subspecies; in each specimen, this elongation could be considered due to variation and squeezing.

Age.—Middle and Upper Oligocene.

Holotype Locality.—Loc. 1939, La Montañita, District of Buchivacoa, State of Falcón. (Also occurs in Districts of Acosta, Democracia and Buchivacoa, State of Falcón; and District of Miranda, Zulia.)

(¹) Trans. Wagner Free Inst. Science, Philadelphia, 1903, vol. 3, pt. 6, p. 1371, pl. 52, fig. 16.

(²) Bull. Amer. Pal., 1917, vol. 5, p. 368, pl. 61, fig. 5.

(³) Bull. Amer. Pal., 1927, vol. 13, p. 57, pl. 33, fig. 2.

Subgenus LAMELLICONCHA Dall

Pitaria (Lamelliconcha) circinata (Born)

Pl. 4, figs. 5, 7.

Venus circinata Born, 1780, Testacea Musei Caesarei Vindobonensis, p. 61, pl. 4, fig. 8.

Pitaria (Lamelliconcha) circinata (Born), Dall, 1903, Trans. Wagner Free Inst. Science, Philadelphia, vol. 3, pt. 6, p. 1269.

Pitaria (Lamelliconcha) circinata (Born), Maury, 1912, Journ. Acad. Nat. Sci. Philadelphia, vol. 15, p. 56, pl. 9, figs. 12, 13.

Pitaria acuticostata Gabb, Maury, 1917, Bull. Amer. Pal., vol. 5, p. 380, pl. 63, fig. 2.

Pitaria circinata (Born), Olsson, 1922, Bull. Amer. Pal., vol. 9, p. 408, pl. 34, figs. 3, 9.

Pitaria (Lamelliconcha) circinata (Born), Maury, 1925, Bull. Amer. Pal., vol. 10, pp. 301-302, pl. 38, figs. 12, 13.

Pitaria (Lamelliconcha) circinata (Born), Palmer, 1927 and 1929, Palæontographica Americana, vol. 1, no. 5, pp. 48-50, pl. 9, figs. 10-12, 15, 16, 19.

We have many specimens of *P. circinata* (Born) from the coast of Venezuela, and these show an infinite variation in size, shape, sculpture, and preservation. As a fossil in Venezuela, it first appears in the Miocene and is more abundant in the upper half of the Miocene; it shows as much or more variation than the Recent. Most of the fossils measure about 30 mm. in length, but one rather worn specimen attains 40 mm. Recent ones up to 45 mm. have been collected. Rather typical specimens of fossil and Recent are figured.

Age.—Miocene - Recent.

Localities.—Districts of Democracia, Buchivacoa, Miranda, Zamora, and Falcón, State of Falcón. Recent along the Venezuelan coast.

Section HYSTEROCONCHA Fischer

Pitaria rosea wiedenmayeri H. K. Hodson, n. subsp. Pl. 3, figs. 4, 9, 10.

The shell is of medium size, rather thin, ornamented with concentric folds, some of which become lamellose anteriorly, and some of which become slightly spinose posteriorly in a single line extending from the beak to the posterior margin. The beaks are moderately high, situated at about the anterior fourth of the length of the shell. The lunule is smooth, defined by an incised line, and rather small; the escutcheon is not defined; posterior to the row of rudimentary spines, the concentric sculpture is less

pronounced; the inner, posterior, dorsal margin, especially on the right valve, is grooved; the pallial sinus is not ascending; the middle left cardinal is heavy and bifid.

This new subspecies is distinguished from the Recent Pacific form, *P. (Lamelliconcha) rosea* (Broderip and Sowerby), in being proportionately a little higher and in having a little larger lunule.

P. rosea wiedenmayeri (n. subsp.) is very similar to *P. van-winkleae* Olsson⁴ but has only one row of spines and a little higher for its length.

Named in honor of Dr. C. Wiedenmayer.

Age.—Upper and Upper Middle Miocene.

Holotype Locality.—300 meters north and 275 meters east of Tres Personas. (Tres Personas is 25 kilometers east and 12.7 kilometers north of Dabajuro.) District of Buchivacoa, Falcón. (Also from Districts of Colina and Democracia, Falcón.)

Genus *DOSINIA* Scopoli

Section *DOSINIDIA* Dall

Dosinia falconensis H. K. Hódson, n. sp.

Pl. 3, figs. 1, 2, 6, 7

The shell is small, fat, high and short, being at least as high as long, and ornamented with regular, concentric, flattened folds. The beak is high and full. The lunule is large, somewhat impressed, defined by an incised line. The posterior dorsal area carries fainter sculpture than the rest of the shell. The inner posterior margins of the valves are grooved beyond the hinge plate, especially on the right valve. The pallial sinus is large, angular, high, and extends a little beyond the center of the shell. The inner margin is entire. The teeth are like *Dosinia* although the anterior lateral is large.

This species is easily distinguished by its height, small size, large diameter, and full beaks.

Age.—Upper Middle Miocene.

Holotype Locality.—5.4 kilometers north and 600 meters west of Urumaco, in Río Codore, District of Democracia, Falcón. (Also from Districts of Democracia, Buchivacoa, and Colina, Falcón.)

(⁴) Bull. Amer. Pal., 1922, vol. 9, pp. 410-411, pl. 35, figs. 2, 3.

Family TELLINIDÆ Deshayes

Genus TELLINA Linné

Subgenus MOERELLA Fischer

Tellina (Moerella) paraguayensis H. K. Hodson, n. sp. Pl. 5, figs. 5, 6, 11

The shell is of medium size, polished, trigonal, inequilateral, equivalve. The beaks are pointed, forming the apex of the trigonal form of the shell, and are situated at the anterior $\frac{4}{7}$ of the shell. The surface is ornamented with concentric, flattened folds. The anterior is rounded while the posterior is smaller, more constricted, and has a steeper dorsal slope. The posterior area of each valve is marked with 2 lines radiating from the beaks and irregular growth lines in place of the regular sculpture found on the rest of the shell. The right valve has 2 cardinals, the posterior of which is bifid, and 2 lateral teeth; the left valve has 2 cardinals, the anterior of which is bifid, and obsolete laterals. The pallial sinus is coalescent with the pallial line below, almost reaches the anterior muscle scar, and attains its highest point under the beaks. The interior of the shell is faintly rayed near the ventral margin.

Age.—Lower Miocene.

Holotype Locality.—Loc. 2207, Cantaura, District of Falcón, Falcón.

Tellina (Moerella) quirosana H. K. Hodson, n. sp. Pl. 5, figs. 1-4

The shell is rather plump, small, polished, subequilateral, subequivalve. The surface is ornamented with flattened folds which are visible only with a lens. The beaks are sharp and pointed, projecting above the dorsal margin, and situated almost in the middle of the shell. The anterior is more plump than the posterior and bluntly rounded; the posterior is more constricted, more pointed, scarcely flexed, and only slightly angulated; the posterior of the right valve is more pointed than that of the left. The left valve has a very narrow, inconspicuous, dorsal area lying at right angles to the plane of the shell. The right valve has 2 cardinal and 2 lateral teeth; the left has 2 cardinals and obsolete laterals. The ligament is fairly long. The pallial sinus is very indistinctly demarked, but is coalescent with the pallial line, extends almost to the anterior adductor scar and reaches its highest point in the center of the shell. The interior of the shell is

microscopically rayed. The shell attains 15 mm. in length.

Age.—Upper Oligocene.

Holotype Locality.—Loc. 6, Quirós, District of Miranda, Zulia.

Subgenus ANGULUS Megerle

Tellina (Angulus) democraciana H. K. Hodson, n. sp. Pl. 5, figs. 7-10

The shell is of medium size, elongate, inequivalve, rather thin. The surface is sculptured with flattened folds, which are sharper and closer together on the anterior. Behind the posterior angulation, on the right valve, the concentric sculpture becomes irregular; on the left valve, the dorsal margins are bent over at right angles to the plane of the shell and project over the opposite valve; on the posterior dorsal area of the left valve occur only growth lines, while between this area and the posterior angulation in front of it, the concentric sculpture is irregular like that on the corresponding area of the right valve. The anterior of the shell is rounded and a little larger than the more pointed posterior. The basal margin of the shell is arcuate and directed up toward the posterior extremity, which is bent to the right. The lateral teeth of the left valve are lacking; the anterior right lateral is adjacent to the cardinals; the posterior right lateral is fairly well developed. The pallial sinus is not recognizable on the available specimens. The interior is very faintly rayed with fine lines anteriorly, and with one or two larger rays in front of the posterior adductor scar.

Age.—Upper Middle Miocene.

Holotype Locality.—5 kilometers north and 350 meters west of Urumaco, in Río Codore, District of Democracia, Falcón.

Genus METIS H. and A. Adams

Metis falconensis H. K. Hodson, n. sp. Pl. 4, figs. 1, 4

The shell is of medium size, inequilateral, inequivalve. The surface is sculptured with growth lines and very faint radial lines. The beaks are situated about in the middle of the shell. The left valve attains its maximum diameter in the middle of the shell; at the posterior, occurs a sharply defined sulcus extending from the beak to the ventral margin; and behind it occurs another faintly defined one. The right valve is concave a little behind the center of the shell; behind this concavity is a broad, distinct, double fold extending a little obliquely from the beak

to the ventral margin; between this fold and the dorsal margin is a sulcus and a smaller fold. The interior of the shell is concealed by the matrix.

Even when found as a cast, this species is easily distinguished from *M. barba wiedenmayeri* (n. subsp.) by its broader, stronger fold on the right valve, and by its being more nearly equilateral.

This new species resembles *M. colombiensis* Weisbord⁵ but has a shallower sulcus on the right valve and has a double instead of a single, large fold just behind this sulcus. The Venezuelan form seems to be a little thinner. The preservation of the Colombian form does not permit a further comparison. An examination of the holotype of *M. colombiensis* shows that the original figure is misleading and the specimen should be re-photographed*. Although in the text Mr. Weisbord says, "This (the broad sulcus of the right valve) is bounded posteriorly by a well defined ridge with a faint suggestion of a fainter one in front," the specimen shows no ridge in front of the sulcus. The apparent ridge in front of the sulcus in the figure is caused by the lighting of the shell when photographed; too much light was probably thrown from the lower right causing the sulcus and the lower right edge of the shell to appear as high spots instead of depressions.

Age.—Middle Miocene.

Holotype Locality.—Loc. 322, Mesa de Saladillo, District of Miranda, Falcón. (Also from Districts of Buchivacoa, Democracia, Miranda and Colina, Falcón.)

Metis barba wiedenmayeri H. K. Hodson, n. subsp.

Pl. 7, figs. 3, 4

The shell is small, inequilateral, inequivalve, full, and obliquely produced anteriorly, constricted and keeled posteriorly. The sculpture consists of very faint radial lines, and rather widely spaced, raised, concentric lines which become stronger near the periphery of the shell. The beaks are situated a little behind the middle of the shell. The anterior of the right valve is swollen in a line from the beak to the produced anterior ventral margin. The right valve is concave between this swelling and the posterior angulation which extends from the beak to the pos-

⁵Bull. Amer. Pal., 1929, vol. 14, p. 256, pl. 40, fig. 6.

*Re-figured in Bulletin 60.

terior margin; behind the sharp and narrow posterior fold is another obsolete one midway between the larger one and the dorsal margin. The left valve is evenly rounded anteriorly, reaching its greatest diameter in the middle of the shell; then, in front of the posterior angulation of the right valve, there occurs on the left valve a slight swelling extending from the beak to the ventral margin; over this the growth lines are not disturbed, but, immediately behind it, the concentric sculpture swings sharply upward in somewhat undulating lines to the dorsal margin; this undulation of the concentric sculpture is due to an impressed line which corresponds to the sharp posterior fold of the right valve and a fainter one above it corresponding to the fainter fold of the right. The margin is thin and compressed. The interior of the shell is concealed by the matrix.

This new subspecies is distinguished from *M. barba* Olsson⁶ by having a less produced anterior, and a shallower sinus in the right valve. It differs from *M. postrema* Pilsbry and Johnson⁷ in having the anterior more produced. It is more compressed posteriorly than *M. trinitaria* Dall⁸; the anterior is proportionately more produced; the large posterior fold of the right valve is sharper, narrower, and located more posteriorly.

Named in honor of Dr. C. Wiedenmayer.

Age.—Upper Middle Miocene.

Holotype Locality.—2.7 kilometers east and 1 kilometer south of Iglesia de Bisures (Iglesia de Bisures is 30 kilometers east and 17 kilometers north of Dabajuro), District of Democracia, Falcón. (Also from Districts of Buchivacoa and Democracia, Falcón.)

Genus *MACOMA* Leach

Subgenus *PSAMMACOMA* Dall

Macoma (*Psammacoma* ?) *democraciana* H. K. Hodson, n. sp. Pl. 6, figs. 3-5

The shell is large, subequilateral, equivalve, sculptured with only concentric growth lines. The posterior carries only a slight fold, which is more conspicuous on the right valve. Both ends of the shell are rounded. The beak is located medially. The

⁶Bull. Amer. Pal., 1922, vol. 9, pp. 427-28, pl. 32, figs. 3, 4.

⁷Proc. Acad. Nat. Sciences of Philadelphia, 1917, p. 202; also, *ibid.*, 1921, p. 426, pl. 46, fig. 8.

⁸Trans. Wagner Free Inst. Science, Philadelphia, 1900, vol. 3, part 5, p. 1041, pl. 46, fig. 24.

hinge carries only 2 small cardinal teeth. The pallial sinus is obscured by the matrix.

The shape easily distinguishes this species because the beak is situated medially and the shell is high.

Age.—Upper Middle Miocene.

Holotype Locality.—About 2.5 kilometers north and 500 meters east of Urumaco, District of Democracia, Falcón. (Also from other Democracia localities.)

Macoma (Psammacoma) falconensis H. K. Hodson, n. sp. Pl. 6, figs. 1, 6, 7

The shell is of medium size, elongated anteriorly, sculptured with concentric growth lines only. The beaks are inconspicuous and situated at about the anterior 4/7 of the length of the shell. The anterior is bluntly rounded; the posterior is smaller, more pointed, and somewhat flexed, especially on the right valve. The teeth consist of 2 cardinals only; the pallial sinus is concealed by the matrix.

This species closely resembles *M. gatunensis* Toulà⁹ but is less excavated behind the beak, and has more poorly defined dorsal areas; a Gatun specimen is figured for comparison, plate 6, figure 2. We have compared our specimens from Gatun with Toulà's figures and with the specimen from Costa Rica which Mr. Olsson¹⁰ figured as *M. gatunensis* Toulà. Both valves of our specimens of this species show no laterals; this would make the Gatun species a *Macoma* rather than a *Tellina*. Anderson's *Tellina gatunensis* Toulà from Colombia¹¹ is probably a different species and genus from the Gatun form, for he states, "it is a typical *Tellina* of the group *T. radiata* Linnaeus", which has an anterior and posterior lateral in the right valve.

Age.—Upper Middle Miocene.

Holotype Locality.—5 kilometers north and 350 meters west of Urumaco, in Río Codore, District of Democracia, Falcón. (Also from other Democracia localities.)

⁹Jahrbuch der k. k. Geolog. Reichsanstalt, 1909, vol. 58 (1908), pp. 729-730, text fig. 10, pl. 28, fig. 10.

¹⁰Bull. Amer. Pal., 1922, vol. 9, p. 429, pl. 29, fig. 13.

¹¹Proc. Cal. Acad. Sci., 1929, vol. 18, no. 4, p. 173.

Family SEMELIDÆ Dall

Genus SEMELE Schumacher

Semele laevis costaricensis Olsson

Pl. 8, fig. 5

Semele laevis costaricensis Olsson, 1922, Bull. Amer. Pal., vol. 9, p. 430, pl. 32, fig. 1.

The shell is rather plump, attains a large size (68 mm. in length) and has obsolescent sculpture. The beak is situated at the anterior 4/7 of the length of the shell. The anterior portion is rather attenuated, the posterior is short and rounded. The area behind the posterior keel is not conspicuous, especially on the largest specimens. The pallial sinus is large and ascending, and extends more than half the length of the shell. The sculpture consists of very faint concentric and radial lines.

Age.—Upper Middle Miocene.*Localities*.—Districts of Democracia, Miranda and Buchivacoa, Falcón.**Semele quirosana** H. K. Hodson, n. sp.

Pl. 9, figs. 8, 12

The shell is small and evenly sculptured with fine, concentric threads. The beak is situated slightly in front of the middle of the shell. The anterior is only slightly smaller than the posterior, which bears the posterior fold. Near the beak the shell is worn almost smooth and is polished.

This species has a more prominent posterior fold and a more central beak than *S. silicata* Dall¹². It is a little larger than *S. sardonica* Dall¹³, its beaks are situated slightly more anteriorly, its anterior is less attenuated, and it lacks the concentric striation between the main concentric threads. Although several specimens have been found, they are all right valves.

Age.—Upper Oligocene.*Holotype Locality*.—Loc. 6, Quirós, District of Miranda, Zulia.**Semele zuliana** H. K. Hodson, n. sp.

Pl. 9, figs. 1-4

The shell is small, attaining 21 mm., and is covered with a rather coarse sculpture of concentric folds. Behind the posterior radial fold, about every other concentric fold is enlarged and becomes a small projecting lamella, and the folds between the enlarged ones do not reach the escutcheon. The beak is situated slightly behind the middle of the shell. The lateral teeth of the

¹²Trans. Wagner Free Inst. Science, Philadelphia, 1900, vol. 3, part 5, p. 987, pl. 38, fig. 6.

¹³U. S. Nat. Mus. Bull. 90, 1915, p. 154, pl. 20, figs. 4, 7.

left valve are only a little less strong than those of the right. The pallial sinus is large, free from the pallial line and obliquely ascending.

Age.—Upper Oligocene.

Holotype Locality.—Loc. 6, Quirós, District of Miranda, Zulia.

Family DONACIDÆ Deshayes

Genus DONAX Linné

Donax buchivacoana H. K. Hodson, n. sp.

Pl. 7, fig. 1

The shell is of medium size, trigonal, high, a little longer anteriorly. The surface is sculptured with fine, incised, radial lines, which are closer together behind the posterior angulation. The anterior is only a little less pointed than the posterior. The teeth are normal and include an anterior and posterior lateral.

This is a rare species and easily distinguished from other Venezuelan forms by its shape.

Age.—Upper Middle Miocene.

Holotype Locality.—1 kilometer west and 400 meters north of Cerro Jomo (Cerro Jomo is 27 kilometers east and 12 kilometers north of Dabajuro), District of Buchivacoa, Falcón.

Donax wiedenmayeri H. K. Hodson, n. sp.

Pl. 8, figs. 1, 2, 7

The shell is large and heavy, elongated anteriorly, short posteriorly. The surface is sculptured with microscopic, incised, radial lines. The posterior is angulated and sharply truncated. The pallial sinus extends in front of the beak. In front of the pallial sinus, the shell is considerably thickened. There is both an anterior and posterior lateral with typical cardinal teeth. The height of the shell is a little greater than half the length. The largest shell measures 60 mm. in length and 35 mm. in height.

D. wiedenmayeri (n. sp.) is always higher for its length than its new subspecies, *falconensis*, even in the young stages.

Named in honor of Dr. C. Wiedenmayer.

Age.—Upper Middle Miocene.

Holotype Locality.—5.4 kilometers north and 600 meters west of Urumaco, in Río Codore, District of Democracia, Falcón. (Also from Districts of Buchivacoa and Democracia, Falcón.)

Donax wiedenmayeri falconensis H. K. Hodson, n. subsp. Pl. 8, figs. 3, 4

This subspecies is like *D. wiedenmayeri* (n. sp.), but is longer

for its height, being always at least twice as long as high. The specimens range in length from 28 mm. to 55 mm.

Age.—Upper Middle Miocene.

Holotype Locality.—300 meters north and 275 meters east of Tres Personas. (Tres Personas is 25 kilometers east and 12.7 kilometers north of Dabajuro.) District of Buchivacoa, Falcón. (Also from District of Democracia, Falcón.)

Donax palmasensis H. K. Hodson, n. sp.

Pl. 7, figs. 2, 8

The shell is small, plump, elongated, and bluntly rounded anteriorly, constricted and pointed posteriorly. The beaks are situated a little behind the middle of the shell. The surface is faintly sculptured with radial lines, more conspicuous on the posterior. The anterior dorsal area carries a long "lunule" not sharply demarked on the surface when well preserved, but outlined by an incised line when weathered. The posterior dorsal area between the indistinct posterior angulation and the turned up dorsal margin is sculptured with oblique instead of radial lines. The margin is denticulate, but the rest of the interior is unknown because all of the specimens consist of two valves tightly closed.

Age.—Upper Oligocene.

Holotype Locality.—Río de Las Palmas, at a point 21.2 kilometers south and 2.8 kilometers west of Dabajuro, District of Buchivacoa, Falcón.

Genus **IPHIGENIA** Schumacher

Iphigenia olssoni H. K. Hodson, n. sp.

Pl. 4, figs. 2, 3, 6

The shell is heavy, plump, trigonal, smooth except for growth lines, inequilateral. The beaks are full, high, situated a little behind the middle of the shell. Both extremities of the shell are pointed, the posterior is smaller, more constricted, its basal margin slightly flexed. The anterior and posterior dorsal areas are folded in and indistinctly demarked. The teeth of the left valve consist of 2 cardinals, the anterior of which is bifid; the right valve has 2 laterals and 2 cardinals, the posterior of which is bifid. The pallial sinus is partly free of the pallial line, rises only slightly and extends a little beyond the middle of the shell.

This species resembles the Atlantic coast Recent species, *I. media* Shuttleworth, but is smaller has higher more pinched

beaks and has a narrower hinge plate.

Named in honor of Mr. Axel A. Olsson.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 2267. Río de Las Palmas, at a point 20.5 kilometers south and 3.1 kilometers west of Dabajuro, District of Buchivacoa, Falcón. (Also from other Buchivacoa localities.)

Family MACTRIDÆ Gray

Genus MACTRA Linné

Subgenus MACTROTOMA Dall

Mactra (Mactrotoma) quirosana H. K. Hodson, n. sp. Pl. 9, figs. 5, 7, 9

The shell is small, subequilateral, triangular. The dorsal areas carry several fine folds; the posterior dorsal area carries in addition to these folds a roughened area between the sculptured part and the weak posterior keel. The beak and main part of the shell are polished and carry only growth lines. The cardinal teeth are not typical as they extend the full width of the hinge plate and their posterior arms do not project over the chondrophore. The shell attains 23 mm. in length.

Age.—Upper Oligocene.

Holotype Locality.—Loc. 6, Quirós, District of Miranda, Zulia.

Section MICROMACTRA Dall

Mactra californica maracaibensis H. K. Hodson, n. subsp. Pl. 9, figs. 6, 19

The shell is of medium size, trigonal, thin. The beaks are sculptured with a few folds which are obsolete on the middle of the shell; the rest of the shell carries only fine concentric threads. The posterior dorsal slope carries 2 rather sharp radial folds. The beak is situated a little in front of the anterior third of the shell.

The sculpture on the beaks is obsolete in the center as in *M. californica* Conrad¹⁴ instead of continuous as in *M. cymata* Dall¹⁵. The new subspecies differs from the former in having a more pointed posterior and anterior; as would be expected, the Upper Miocene specimens approach the Recent more closely than do the Lower Miocene ones.

Age.—Miocene.

¹⁴Journ. Acad. Nat. Sci. of Philadelphia, 1837, vol. 7, p. 240, pl. 18, fig. 12.

¹⁵Trans. Wagner Free Inst. Science, Philadelphia, 1898, vol. 3, p. 893, pl. 33, fig. 23.

Holotype Locality.—Río Coquiza, about 2 kilometers north and 6 kilometers east of Quirós, District of Miranda, Zulia.

Genus LABIOSA (Schmidt) Möller

Subgenus RAETA Gray

***Labiosa (Raeta) undulata* Gould**

Pl. 7, fig. 6

Lutraria undulata Gould, 1851, Proc. Boston Soc. Nat. Hist., vol. 4, p. 89.

Labiosa (Raeta) undulata (Gould), Lamy, 1917, Journal de Conchyliologie, vol. 63, pp. 355-356.

Labiosa (Raeta) undulata (Gould), Olsson, 1924, The Nautilus, vol. 37, p. 130.

Labiosa (Raeta) hasletti Anderson, 1929, Proc. Cal. Acad. Sci., vol., 18, pp. 177-178, pl. 23, figs. 2, 3.

Mr. A. A. Olsson has called to our attention the similarity of the fossil Venezuelan forms to the Recent Pacific species *L. (Raeta) undulata* Gould. The Recent species is very variable in shape and sculpture, while the fossil forms have also been distorted during or after fossilization. The Venezuelan forms are very different from the East Coast *L. canaliculata* Say with its beaks situated far posteriorly.

Specimens of *L. (R.) hasletti* Anderson from its type locality, Tuberá, Colombia, were kindly lent us by Mr. A. A. Olsson for comparison. This Colombian form seems to have no constant characters that would distinguish it from the Recent.

Age.—Upper Middle Miocene.

Locality.—Urumaco, District of Democracia, Falcón.

***Labiosa undulata gardnerae* Spieker**

Pl. 7, fig. 5

Labiosa (Raeta) gardnerae Spieker, 1922, Johns Hopkins Univ. Studies in Geol., no. 3, pp. 168-169, pl. 10, fig. 10.

Mr. Olsson kindly lent specimens from Peru which he identified as *L. (Raeta) gardnerae* Spieker, and which he recognized as belonging to the stock of *L. undulata* Gould, for comparison with Venezuelan Raetas. There seems to be no difference between these specimens and many of the Venezuelan forms which could not be considered due to squeezing. These differ from the Recent species mainly in being considerably smaller, after due allowance has been made for distortion.

L. (Raeta) gabbi Pilsbry and Johnson¹⁶ from Santo Domingo seems to belong to this same group; in the figure, its beaks appear a little farther anterior than in *gardnerae*.

¹⁶Proc. Acad. Nat. Sci. of Philadelphia, 1917, p. 202; *ibid.*, 1921, p. 427, pl. 46, fig. 11.

Age.—Miocene.

Localities.—Common in the states of Falcón and Zulia.

Labiosa undulata mirandana H. K. Hodson, n. subsp. Pl. 7, fig. 7

In Middle Oligocene in Venezuela, appears a small *Raeta* that is like the Miocene form *gardnerae*, except that it does not exceed 30 mm. in length, while most of the specimens are smaller. It is not very abundant, but, a few specimens are found in Middle and Upper Oligocene. The beak is situated farther posteriorly than in *L. gabbi* Pilsbry and Johnson, *loc. cit.* All of the specimens are preserved as casts.

Age.—Middle and Upper Oligocene.

Holotype Locality.—At Mene de Saladillo, just north of oil seep, near Quirós, District of Miranda, Zulia. (Also from Districts of Buchivacoa and Democracia, Falcón.)

Family CORBULIDÆ Fleming

Genus CORBULA Lamarck

Subgenus CORBULA s.s.

Corbula (Corbula) zuliana F. Hodson, n. sp. Pl. 10, figs. 1-3, 5

Shell small, high, very inequivalve; right valve with only concentric sculpture, left valve with concentric and radial. The right valve is much larger and deeper, and largely conceals the small left valve. The right valve is deep, about as high as long, and bears strong concentric ribbing except on the umbones where the sculpture becomes practically obsolete and smooth; the strong concentric ribs are much wider than the interspaces; on the posterior slope, and extending to the beaks, are 2 keels, the dorsal one being the less prominent; the flattened area between the carinae is marked with concentric sculpture like that on the rest of the valve and ends in a blunt truncation posteriorly. The smaller left valve is similar to the right but the posterior keels and truncations are less pronounced and the concentric sculpture finer; ventrally, about 7 small radials appear on the anterior two-thirds of the valve of a very young specimen.

Our species is similar to *C. sericea* Dall¹⁷, but is easily distinguished by the lack of radial striation in the interspaces of the

¹⁷Trans. Wagner Free Inst. Science, Philadelphia, 1898, vol. 3, pt. 4, pp. 848-849, pl. 36, fig. 8.

right valve and the much smaller size of the left valve which has overriding radials.

Age.—Upper Oligocene.

Holotype Locality.—Loc. 6, Quirós, District of Miranda, Zulia.

Corbula (Corbula) carrizalana F. Hodson, n. sp.

Pl. 10, figs. 4, 6-9

The shell is of medium size, with an inflated, trigonal, right valve, whose height is equal to or greater than the length. The right valve is marked with strong, concentric rugae, which are wider than the interspaces; on a right valve 9.5 mm. high, 36 rugae can be counted; the beak, however, is smooth and prosogyrate; there is a tendency for adjacent pairs of rugae on the inflated part of the shell to coalesce on the dorsal side of the anterior slope and on the dorsal side of the dorsal posterior carina; on the posterior slope are 2 carinae, the dorsal of which is less prominent; the area between the carinae is flattened or slightly depressed and ornamented with the same concentric rugae which cover the rest of the valve, but over the area between the carinae, they are less pronounced; the posterior end is more produced in some specimens than in others; the usual length and height of the right valve is about 12 mm. and the diameter 7 mm. to 8 mm. The left valve is longer than high, with a prosogyrate beak located in front of the middle of the shell; the valve is smooth except for radial threads of varying strength, usually about 12 in number; carinae are absent on the posterior slope; our specimens of this valve are about 9.5 mm. long, 7 mm. to 7.5 mm. high, and 4 mm. to 4.5 mm. in diameter.

This species is somewhat similar to *C. sancti-dominici* Maury¹⁸, but is larger and the umbonal part of the right valve is more inflated and broader. The Dominican type has narrower umbones and ventrally the valve is more produced anteriorly and posteriorly. The left valve of *C. sancti-dominici* seems to be unknown. The left valve of *C. heterogenea* Dall¹⁹ has a more anterior beak, thus giving the valve a different shape. The right valve of *C. heterogenea* is more rostrate posteriorly, while that of our spe-

¹⁸Bull. Amer. Pal., 1925, vol. 10, pp. 250-251, pl. 30, fig. 2.

¹⁹Trans. Wagner Free Inst. Science, Philadelphia, 1898, vol. 3, part 4, p. 850, pl. 36, fig. 15.

cies is more rounded.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 185, 2.3 kilometers east and 750 meters north of La Vela de Coro lighthouse, District of Colina, Falcón. (Also from Districts of Colina and Miranda, Falcón.)

Subgenus CARYOCORBULA Gardner

Corbula (Caryocorbula) buenavistana F. Hodson, n. sp.

Pl. 12, figs. 8-13; pl. 8, fig. 6

The shell is large, high, and similarly sculptured on both valves. The prosogyrate beaks are about central, but in some specimens they are a little in front of the middle. Both valves tend to be somewhat produced anteriorly and rounded; the posterior slope is bicarinate and is more or less depressed between the carinae; the carinal area is extended posteriorly into an acute, pinched rostrum; the ventral margins are strongly arcuate and show a more or less pronounced depression in front of the keels. The valves are ornamented with 4-6 major concentric waves which become obsolete just in front of the carinal area; the beaks are smooth, but distally, small concentric threads appear; the major concentric undulations are on the distal two-thirds of the valves; except for the beaks, the entire surface is covered with close-set concentric threads, which carry across into the carinal area. No radial sculpture is present. The left valve is slightly smaller and is flattened at the ventral margin into a wide shelf at right angles to the plane of the valve; this shelf fits into the right valve.

This species resembles *C. hexacyma* Brown and Pilsbry²⁰, but our species has heavier, rounder, concentric ribs and narrower interspaces, lacks radial striation, and has a narrower carinal area. Brown and Pilsbry do not give any dimensions of their type, but our species is proportionately higher for its length.

Age.—Middle Miocene.

Holotype Locality.—Loc. 149, in turn in quebrada, 330 meters from its outlet into the sea, on Buena Vista structure at a point 4.7 kilometers east and 4.1 kilometers north of La Vela de Coro lighthouse, District of Colina, Falcón. (Also from Districts of Democracia and Colina, Falcón.)

²⁰Proc. Acad. Nat. Sciences of Philadelphia, 1912, p. 518, pl. 26, fig. 4.

Corbula (Caryocorbula) quirosana F. Hodson, n. sp. Pl. 9, figs. 10, 11, 13-18

The shell is small, variable, somewhat elongated, slightly inequivalve, with prosogyrate beaks situated a little in front of the middle of the shell. Both valves are rounded anteriorly and similarly sculptured. The usual length of this abundant species is 7 mm. to 10 mm. The posterior slope is sometimes bicarinate, but the dorsal carina is less prominent or even obsolete. Between the carinae, there is a depressed lanceolate area crossed by concentric growth wrinkles and microscopic, radial lines, which are visible on well preserved specimens. The valves are constricted ventrally in front of the strong posterior carina, but, otherwise, the ventral margin is strongly arcuate. Behind the pronounced constriction, the carinal area is truncated. In front of the beaks, there is a slight depression. The right valve is slightly larger and a little more produced posteriorly. The left valve fits into the right and the ventral margin is flattened and forms a wide shelf more or less at right angles to the plane of the valve. The external ornamentation is variable and consists of 4-9 concentric waves wider than the troughs; the whole surface is covered with auxiliary growth wrinkles which are especially pronounced near the ventral edge of the valves; the umbones are smooth except for faint, concentric lines of growth; the rest of the shell is sculptured with faint radial lines, also.

This abundant and common Oligocene species resembles the much larger Miocene form, *C. hexacyma* Brown and Pilsbry (l. c.), and *C. guaiconensis* Maury²¹, the latter being somewhat larger and higher for its length than our adult specimens.

Age.—Middle and Upper Oligocene.

Holotype Locality.—Loc. 6, Quirós, District of Miranda, Zulía. (Also from the Districts of Buchivacoa, Democracia, Colina, and Acosta, State of Falcón; District of Bolívar, Zulía.)

Corbula (Caryocorbula) urumacoensis F. Hodson, n. sp. Pl. 12, figs. 1-7

The shell is rather large, elongate, with both valves similarly sculptured. On each valve, there are 2 posterior keels, the dorsal of which is smaller and sometimes obsolete; the main keel is twisted posteriorly; the area between the keels is flattened or de-

²¹Bull. Amer. Pal., vol. 10, 1925, p. 262, pl. 30, figs. 13, 14, 18.

pressed and crossed by strong diagonal growth lines or ribs, which tend to coalesce on the dorsal keel or near the dorsal margin of the valve if the keel is lacking. The beaks are rather low, prosogyrate, and situated in front of the middle of the shell; the small depression in front of the beaks continues anteriorly for a distance as a faint sulcus on the dorsal side of the anterior slope; before the sulcus disappears anteriorly, it has become more or less parallel to the hinge line; it has the appearance of the beginning of a "lunule" which was not closed anteriorly. The posterior end is rostrate, the anterior rounded. The ventral base of each valve is flattened, but that of the left valve is more so, as it forms a flat base which fits into the larger right valve. The inner margin of the right valve usually carries a peripheral groove into which fits the projecting margin of the left valve. The valves are sculptured in front of the carinal area with small, very close-set, concentric threads separated by very narrow grooves; near the ventral margin, the sculpture is a little coarser; the beaks seem to be smooth or worn, but the very minute concentric sculpture soon appears; the concentric sculpture is so fine that the shell seems to be almost smooth until examined with a lens.

This species is usually smaller than *C. democraciana* (n. sp.) and has much finer concentric sculpture.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 86, about 2.5 kilometers north and 500 meters east of Urumaco, District of Democracia, Falcón. (Also from Districts of Miranda, Colina and Democracia, Falcón.)

***Corbula (Caryocorbula) democraciana* F. Hodson, n. sp.** Pl. 11, figs. 1-6

The shell is large with both valves similarly sculptured. There is considerable variation in the shape of the shell and in the size and strength of the concentric ribs. Adult specimens are usually more than 20 mm. long and have 25-35 recognizable concentric ribs besides the close-set, frequently worn and rather indistinct, concentric sculpture on the beaks; the ribs are wider than the interspaces and do not extend into the carinal area; the ribs, and sometimes the interspaces, also, bear auxiliary concentric growth wrinkles. The proportion of the length of the shell to the height

is variable; the extremes noted for right valves are length 22 mm., height 12.5 mm., and length 19.5 mm., height 13 mm. On the posterior slope, two small keels are present and the area between them is flattened or depressed and crossed by diagonal, somewhat elevated ribs; when well enough preserved to be counted, there are about one half as many diagonal ribs as major concentric ribs; the dorsal keel is sometimes indistinct; the main keel is sharp and twisted posteriorly. Ventrally, the base of each valve is flattened, but that of the left valve is more so, as the basal flattening fits into the right valve. The beaks are prosogyrate, and situated a little in front of the middle of the shell.

Our species is much larger and has more regular sculpture than the specimens figured as *C. dominicensis* Gabb by Pilsbry²².

We have one specimen from Cartagena, Colombia, which may be the same as the Venezuelan species, but it is a little smaller and proportionately a little more elongate.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 94, the first main ridge 350 meters north of Urumaco, District of Democracia, Falcón. (Also from District of Colina, Falcón.)

Subgenus ALOIDIS

Corbula (Aloidis) gatunensis Toulou

Pl. 11, fig. 7

Corbula gatunensis Toulou, 1909, Jahrbuch der k. k. Geolog. Reichsanstalt (1908), vol. 58, p. 733, pl. 27, fig. 12.

Corbula gatunensis Toulou, Brown and Pilsbry, 1911, Proc. Acad. Nat. Sciences of Philadelphia, p. 371.

Corbula gatunensis Toulou, Olsson, 1922, Bull. Amer. Pal., vol. 9, pl. 24, fig. 7.

This species is rare in Venezuela, having been found in only two localities.

Age.—Upper Middle Miocene.

Localities.—District of Colina, Falcón.

Class GASTROPODA Cuvier

Family COLUMBELLIDÆ Troschel

Genus STROMBINA Mörch

Strombina quirosana H. K. Hodson, n. sp.

Pl. 10, figs. 12, 13

The shell is small, rapidly tapering, and smooth except on the anterior constricted portion of the body whorl. The protoconch

²²Proc. Acad. Nat. Sciences of Philadelphia, 1921, p. 427, pl. 46, figs. 12, 13.

is small, with about $1\frac{1}{2}$ rounded whorls; these are followed by about 8 straighter-sided smooth whorls. The body whorl is smooth with numerous, fine, impressed, spiral lines on the anterior constricted portion. The anterior canal is constricted and somewhat recurved; the posterior canal is shallow. The apertural face of the shell is somewhat flattened, making the body whorl trigonal in cross section. The characteristics of the aperture seem to vary with maturity; only three specimens have been found so far, two of which have a thickened outer lip and callused inner lip, while the other has a thin outer lip and no callus on the inner lip, as though the latter individual had died when the callosities were dissolved; otherwise the specimens are identical. The inner lip is strongly denticulate with about 5 prominences; the outer lip when mature, is thickened, projects back on the preceding whorl, and carries internally about 6 lirae.

This species is easily distinguished by its minute size and smooth whorls.

Age.—Upper Oligocene.

Holotype Locality.—Loc. 6, Quirós, District of Miranda, Zulia.

Strombina falconensis H. K. Hodson, n. sp.

Pl. 10, figs. 10, 11

The shell is of medium size, has a tapering spire, and except on the body whorl, only longitudinal sculpture. The protoconch and earliest whorls are broken off of all the present specimens. The smallest whorl with the external sculpture preserved measures about 2.8 mm., in smallest diameter; it carries numerous longitudinal folds, which disappear just above the suture of the succeeding whorl; this same sculpture is found on all the whorls, although on one rather poorly preserved specimen, the folds do not appear plainly until the whorls reach 5 mm. in diameter. The body whorl carries from 15 to 24 longitudinal folds, and from 6 to 12 spiral cords on the lower half (including those on the anterior canal). The inner lip is microscopically denticulate. The outer lip is free from longitudinal folds, is a little thickened, and raises the suture line slightly as it overlaps farther on the previous whorl; internally, the lip carries about 6 strong lirae. The body whorl is not trigonal in cross section.

This species is very similar to *S. lessepsiana* Brown and Pilsbry²³, but has fewer lirae on the inside of the outer lip, a smaller apical angle, a less thickened lip, and lacks the trigonal form of the body whorl. It differs from *S. colinensis* (n. sp.) in lacking the trigonal form of the body whorl, in having fewer lirae on the inside of the outer lip, in being larger, in lacking spiral sculpture on the spire whorls.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 185, 2.3 kilometers east and 750 meters north of La Vela de Coro lighthouse, District of Colina, Falcón.

Strombina colinensis H. K. Hodson, n. sp.

Pl. 11, fig. 8

The shell is small, sculptured spirally and longitudinally, distinctly trigonal in a cross section of the body whorl. The protoconch and early whorls are lacking. The smallest whorl with sculpture preserved measures 2.8 mm. in smallest diameter, and has only thin, longitudinal folds, which just reach the suture of the following whorl; on the second whorl after this one, fine spiral sculpture begins and the folds do not extend quite to the anterior suture. The body whorl has 3 thickenings and spiral lines which become strong cords on the lower third; the longitudinal folds are lacking after the second thickening of the shell; the outer lip laps farther over the preceding whorl than the rest of the body whorl, leaving less than half as much of the preceding whorl exposed. The inner lip is not denticulate on the present specimens. The inside of the outer lip carries about 9 close-set lirae. The anterior canal is short and heavy.

This species is smaller than *S. falconensis* (n. sp.), has spiral sculpture, a body whorl with 3 thickenings, and more lirae on the inside of the outer lip. It is a heavier, shorter form than *S. lessepsiana* Brown and Pilsbry.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 185, 2.3 kilometers east and 750 meters north of La Vela de Coro lighthouse, District of Colina, Falcón.

²³Proc. Acad. Nat. Sciences of Philadelphia, 1911, pp. 352-353, pl. 25, figs. 11, 12.

Family BUCCINIDÆ Troschel

Genus PHOS Montfort

Dr. W. P. Woodring²⁴ has differentiated some groups of *Phos* which may be of value when used subgenerically. Our fossil specimens show so many intergrading forms that it does not seem advisable to consider these groups as being of generic value. They remind one of the intergrading subgenera of *Arca* and *Pecten*, which some systematists try to raise to generic rank. Of the 9 species or subspecies of Venezuelan *Phos* described here, 7 have angulated whorls as in the *Phos senticosus* (Linné) group or the "Engoniophos" group. The depth of the stromboid notch in the Venezuelan forms is variable, as it is in the Bowden specimens and in the Pacific *P. senticosus* specimens. Some of the *P. senticosus* specimens show as deep a notch as is said to be characteristic of "Engoniophos". It is questionable whether Engoniophos is of even subgeneric value.

Dr. Woodring, in enumerating the characteristics of Antillophos, mentioned the "denticles" on the edge of the inner lip. Judging from our specimens of the Bowden Antillophos, we infer that the term "denticles", as used, means that the parietal callus is so thin that the spiral sculpture of the shell elevates it, and not that there are prominences inherent to the callus itself.

Subgenus PHOS s. s.

Phos maracaibensis wiedenmayeri F. Hodson, n. subsp. Pl. 13, figs. 1-4

The shell is rather heavy and ornamented with spinous nodes in the adult stage. The nuclear whorls are missing; there are about 6 subsequent whorls. The 3 youngest whorls found as yet show strong spiral sculpture; there are about 5 primary spirals on the first whorl with a faint intercalated secondary in the interspaces; on the third whorl, there is a total of about 9 spirals of various strengths; the number of longitudinal ribs on the two youngest whorls found, varies from 13 to 14, and they are crossed by the spiral sculpture. On the succeeding whorls, the spiral becomes practically obsolete except on the subsutural shoulder and on the base of the body whorl. On succeeding whorls, the longitudinal ribs become larger and fewer; on the antepenultimate

²⁴Carnegie Institution of Washington, 1928, Publ. No. 385, pp. 259-261, 263.

whorl, there are usually 9, on the penultimate whorl about 8, and on the body whorl about 7 spinous, longitudinal ribs. The base of the body whorl bears 6-8 spiral threads. The columella carries a basal fold, followed by a posterior groove and swelling. The siphonal fasciole is well developed, limited posteriorly by a spiral cord, and bears about 5 faint spirals. The outer lip carries internally about 15 raised lirae. The anterior canal is moderately long and somewhat recurved. The aperture is relatively narrow.

This form is described as a subspecies of "*Potamides*" *maracai-bensis* Weisbord²⁵ rather than as another species because the Colombian specimen does not clearly show the young whorls. The parts of the earlier whorls which are not decorticated on the Colombian specimen tend to have few longitudinal ribs and indicate that the species may have been derived from a different ancestral stock. Moreover, the Venezuelan specimens tend to have more longitudinal ribs on the adult whorls.

Named in honor of Dr. C. Wiedenmayer.

Age.—Miocene.

Holotype Locality.—4.9 kilometers north and 380 meters west of Urumaco, in Río Codore, District of Democracia, Falcón. (Also from Districts of Democracia and Falcón, Falcón.)

Phos tuberaensis urumacoensis F. Hodson, n. subsp. Pl. 14, figs. 1, 2

This subspecies differs from *P. tuberaensis* Anderson²⁶ in having shorter whorls, a blunter spire, a more angular shoulder, and tends to have a longer anterior canal. The Tuberá specimens consistently show the longer whorls and are more slender. Although the Venezuelan specimens are somewhat worn, the sculpture seems to be weaker than in the Colombian specimens.

Age.—Upper Middle Miocene.

Holotype Locality.—In Río Codore, 4.9 kilometers north and 380 meters west of Urumaco, District of Democracia, Falcón. (Also from Districts of Colina and Democracia, Falcón.)

Phos venezuelensis F. Hodson, n. sp. Pl. 15, figs. 3-6

The shell is of moderate size and ornamented in the neanic stage with both spiral and longitudinal ribs; the spiral sculpture almost disappears on the adult whorls. There are 2 1/2 nuclear

²⁵Bull. Amer. Pal., 1929, vol. 14, p. 270, pl. 43, figs. 8, 9.

²⁶Proc. Cal. Acad. Sciences, vol. 18, no. 4, pp. 135-136, pl. 9, figs. 1, 2, 3.

whorls whose sculpture is not preserved; these whorls are continuous with the neanic whorls; there are about 7 post-nuclear whorls; the first 3 or 4 post-nuclear whorls bear 9-10 longitudinal costae, crossed by about 5 strong, more or less equally spaced spirals; an intercalated spiral thread may appear between them in the later neanic whorls; the more adult whorls usually lose most of the spiral ornamentation, except that the base of the body whorl always shows 6 or more strong spirals; the subsutural shoulder may show more or less obsolete spirals; there are about 7 prominent longitudinal costae on the body whorl; on the later whorls, the costae usually bear a knob or spine on the angulation a little in front of the posterior suture. The siphonal fasciole is prominent, narrow, and limited posteriorly by a strong spiral cord, in front of which often lies a groove; the fasciole is ornamented with about 4 spiral threads. There is a strong fold at the base of the columella with a deep groove and swelling posteriorly. Internally, the outer lip bears 9-12 strong, raised, elongate lirae.

The adult whorls somewhat resemble *P. maracaibensis wiedenmayeri* (n. subsp.), but the younger stages are entirely distinct with fewer spirals and fewer longitudinal costae.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 2391, 1 kilometer east and 200 meters north of Hato Guayubo, District of Buchivacoa, Falcón. (Hato Guayubo is 14 kilometers south of Dabajuro.) (Also from other Buchivacoa localities.)

Phos venezuelensis riocodorensis F. Hodson, n. subsp.

Pl. 14, figs. 3, 4

This subspecies is rare in our present collections. It is a much larger shell than the species, *sensu stricto*, and the early spire whorls are more tapering. The spiral lines, even in the neanic whorls are more numerous and persist on all the whorls; in the middle of the body whorl, they are fainter, but still perceptible. Additional material may show this form to be specifically distinct.

Superficially, this subspecies resembles *P. maracaibensis wiedenmayeri* (n. subsp.), but the two forms are not closely related, as *P. maracaibensis wiedenmayeri* bears 13-14 longitudinal costae in the young stages; *P. venezuelensis riocodorensis*, as in the species, *sensu stricto*, bears only 9.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 70A, 4.9 kilometers north and 380 meters west of Urumaco, in Río Codore, District of Democracia, Falcón.

Phos (Phos) codorensis F. Hodson, n. sp.

Pl. 15, figs. 1, 2

This species has more pronounced longitudinal ribbing than spiral. The youngest whorls are not well preserved; the nuclear whorls are missing. There are about 7 post-nuclear whorls; the sculpture on the first whorl is worn off; the remaining whorls have about 7 longitudinal costae which are crossed by 6-8 rather weak primary spirals between which there are 2 or 3 weaker secondaries in the neanic stage and 3 or 4 in the ephebic. The columella has a strong basal fold with a small groove behind it. There is a thick parietal callus. The siphonal fasciole is limited posteriorly by a sharp spiral cord with a sulcus in front of it; the fasciole is crossed by sigmoid growth lines, but spiral sculpture is practically absent; behind the fasciole, there is a rather deep groove or constriction. The outer lip carries about 12 sharp, very long lirae. The stromboid notch tends to be deeper than in most of our Venezuelan forms. The anterior canal is deeply emarginate.

Age.—Upper Middle Miocene.

Holotype Locality.—4.65 kilometers north and 550 meters west of Urumaco, in Río Codore, District of Democracia, Falcón.

Phos (Phos) buchivacoensis F. Hodson, n. sp.

Pl. 16, figs. 1, 4

The shell is of moderate size and ornamental with strong spirals. The nuclear whorls were not found; there are 6 or 7 post-nuclear whorls. On the neanic whorls, there are 7-8 strong longitudinal costae crossed by 5 or 6 strong spirals; in the later neanic and ephebic stages, a secondary is, in many specimens, intercalated between the primary spiral threads. On the body whorl, there are usually 7 longitudinal costae, somewhat spinous at the angulation; there are at least 15 primary spirals between the suture and the siphonal fasciole; a secondary spiral frequently occurs between the primaries. There are 4 or 5 spirals on the siphonal fasciole, which is limited by a spiral cord posteriorly with sometimes a groove in front of it. Internally, the outer lip bears 8 or 9 long, slightly elevated lirae. The sutures are undulating. The

aperture is about $3/7$ of the total length of the shell. The columella bears a strong basal fold, with a deep groove back of it, followed by a swelling.

Age.—Upper Middle Miocene.

Holotype Locality.—13 kilometers due south of Dabajuro, 1.4 kilometers north of Hato Guayubo, District of Buchivacoa, Falcón. (Also from other Buchivacoa localities.)

Phos (Phos) democraciensis F. Hodson, n. sp.

Pl. 16, figs. 2, 3

The shell is rather large, variable, and ornamented with spinous costae in the adult stages. The nuclear whorls are missing; there are about $6\frac{1}{2}$ subsequent whorls; the first post-nuclear whorl is not well preserved; on a whorl about 2.7 mm. in diameter, there are 11 longitudinal costae crossed by 5-7 primary spiral threads; the next whorl has about 7 primary and 1-3 secondary spiral threads; the secondaries occur as the result of the intercalation of a single weak thread between the primaries on the posterior half of the whorl; the number of spirals increases on the larger whorls; on the antepenultimate whorl, there are 12-14 spiral threads, and at least twice as many on the body whorl. The longitudinal costae (about 8 on the body whorl) form spinous projections on the angulation of the last two whorls; the angulation or shoulder on the penultimate whorl is about halfway between the sutures; on the body whorl, this shoulder is near the posterior third of the whorl. The siphonal fasciole is lamellose and marked with 3 or 4 spirals, and limited posteriorly by a sharp spiral cord. There is a strong basal fold on the columella with a depression behind it and then a swelling posteriorly. The inside of the outer lip carries 20 or more, short, weak lirae. The aperture is broad and slightly more than $2/5$ of the probable length of the shell.

Age.—Upper Middle Miocene.

Holotype Locality.—5.4 kilometers north and 600 meters west of Urumaco, in Río Codore, District of Democracia, Falcón. (Also from Districts of Democracia and Buchivacoa, Falcón.)

Phos (Phos) falconensis F. Hodson, n. sp.

Pl. 17, figs. 6, 7

The shell is small, rather slender, and all the whorls are ornamented with longitudinal costae crossed by spiral threads. The

nuclear whorls are not well preserved; there are 5 1/2 or 6 subsequent whorls. The first three post-nuclear whorls have about 9 longitudinal costae; these whorls show 5 primary spirals with a smaller intercalated one beginning to appear between them. On the body and penultimate whorls, there are many spiral threads of various strengths; usually there are 2-4 weaker threads between the stronger. On the body whorl, there is a pronounced subsutural shoulder; the area between the angulation and the suture carries about 10 irregular spirals of various sizes; the longitudinal costae, 7 in number, form prominent short knobs or spines on the angulation; the longitudinal costae are crossed by many spirals (about 3 to the millimeter). The siphonal fasciole is limited posteriorly by a spiral cord, carries about 4 main spirals, and is sharply demarked from the body whorl by a depressed constriction ornamented with spiral cords. There are about 10 weak, short lirae on the inner side of the outer lip, some of which are paired. The columella carries a strong basal fold, with a posterior groove and swelling. The spire is slightly longer than the body whorl.

Age.—Upper Oligocene or Lower Miocene.

Holotype Locality.—Quebrada Sarrura, northeast of Guaidima, District of Acosta, Falcón. (Also from the other Acosta localities.)

Subgenus ANTILLOPHOS Woodring

Phos (Antillophos) cocoditoensis F. Hodson, n. sp.

Pl. 17, figs. 2-4

The shell is moderately slender and ornamented with spiral and longitudinal ribs. There are about 2 1/2 nuclear whorls, poorly preserved, and continuous with the subsequent whorls (about 6 1/2 in number). The first post-nuclear whorl is not well preserved. The remaining whorls have 7 or 8 strong, longitudinal costae, crossed by about 6 strong spirals, including the sutural thread, which is more undulating than the others. In the later neanic and adult whorls, a secondary spiral thread appears between the primaries. The siphonal fasciole is limited posteriorly by a narrow, sharp, spiral thread with a sulcus sometimes appearing in front of it; the fasciole bears about 5 spirals and is separated from the body whorl by a slight constriction, which is also

ornamented with spirals. There is a strong basal fold on the columella with a deep groove behind it. Internally the outer lip is marked with about 10 strong, very long lirae.

Age.—Lower Miocene.

Holotype Locality.—Cantaura, Cocodito area, District of Falcón, Falcón.

Phos (Antillophos) paraguayensis F. Hodson, n. sp.

Pl. 17, figs. 1, 5

The shell is rather slender, sculptured in the younger stages with both longitudinal and spiral ribs, and, in the adult stages, the longitudinal costae are almost entirely lacking. The first $1\frac{1}{2}$ nuclear whorls are poorly preserved and continuous with the subsequent whorls, which are about $6\frac{1}{2}$ in number. The first $2\frac{1}{2}$ post-nuclear whorls carry about 8 longitudinal costae crossed by 4 spiral threads including the sutural thread, which is more undulating than the others. The following 2 whorls carry about 7 and 6 longitudinal costae, respectively, and are crossed by about 9 spirals, the additional spirals being formed by an intercalated thread between each primary. The last whorls do not have longitudinal costae, but there are 2 varices, one on the lip and another occurring $1\frac{1}{2}$ whorl posteriorly; the penultimate whorl carries about 10 nearly equal spirals, not quite as wide as the interspaces; in addition, a small secondary spiral may appear between a few of the primaries; the body whorl carries approximately 2 spirals to a millimeter, the spirals being almost uniformly spaced. The siphonal fasciole is limited posteriorly by a rather narrow spiral cord, and is ornamented with about 6 spirals. The base of the columella carries a strong fold with a groove behind it, followed by a swelling. The outer lip is thickened and furnished internally with about 15 long, strong, regularly spaced lirae.

This species has weaker longitudinal sculpture than *P. semicostatus* Gabb²⁷ to which it bears a general resemblance. It is a smaller shell than *P. subsemicostatus* Brown and Pilsbry²⁸ and

²⁷Trans. Amer. Phil. Soc., vol. 15, 1873, p. 212. See Bull. Amer. Pal., vol. 5, 1917, p. 251, pl. 40, figs. 11, 12.

²⁸Proc. Acad. Nat. Sciences of Philadelphia, 1911, p. 350, pl. 25, fig. 3.

loses its longitudinal costae at a younger stage.

Age.—Lower Miocene.

Holotype Locality.—Cantaura, Cocodito area, District of Falcón, Falcón.

Family MURICIDÆ Tryon

Genus MUREX Linné

Murex recurvirostris quirosensis F. Hodson, n. subsp. Pl. 20, figs. 1, 2, 3

This subspecies differs from *M. recurvirostris* Broderip²⁹ in being more slender, in having a more attenuate spire, in being more spinous especially in the younger stages, in having more delicate spiral sculpture, and in having 2 strong intervarical tubercles (sometimes a weak third one is present) instead of 3 or 4 commonly found in the recent specimens.

Our Oligocene specimens have a thin, inconspicuous parietal callus which does not stand out from the parietal wall. In the Lower Miocene, intergrading forms are found between this Oligocene form and those occurring in the Upper Tertiary, and usually show a strong parietal callus which stands out from the parietal wall.

Age.—Upper Oligocene.

Holotype Locality.—Loc. 6, Quirós, District of Miranda, Zulia; intergrading forms are found in the States of Zulia and Falcón. (*Sensu stricto*, also from District of Buchivacoa, Falcón.)

Murex venezuelanus F. Hodson, n. sp. Pl. 18, fig. 1; pl. 19, figs. 1, 3

The shell is large, heavy, and ornamented with conspicuous spines. The protoconch is missing; there are about 6 subsequent convex whorls; the angular shoulder on each whorl bears 3 strong varices with a weaker intervarical tubercle between them. On the body whorl below the angulation, on adult specimens, there are 3 stronger spiral cords which form spines on the varices; the two anterior of these form larger spines. All the whorls show a spiral sculpture of close-set threads, some being stronger than others. The outer lip shows about 12 internal lirae; the lirae on the anterior half of the lip may occur in pairs.

Age.—Upper Middle Miocene.

Holotype Locality.—In Río Codore, 4.65 kilometers north and 550 meters west of Urumaco, District of Democracia, Falcón. (Also from other Democracia localities.)

²⁹ Proc. Zool. Soc. London, 1832, p. 174.

Family THAISIDÆ Dall**Genus CYMIA Mörch**

Cymia buchivacoana H. K. Hodson, n. sp. Pl. 18, fig. 4; pl. 22, fig. 2

The shell is large, attaining 93 mm. in length, with similar sculpture on all the whorls. The earliest stage is unknown. The smallest whorl preserved is 1.5 mm. in diameter, keeled, ornamented with 2 spiral cords besides the scalloped keel. The spiral cords increase in number as the whorls increase in size. The keel is situated about in the middle of the body whorl; on the spire, each whorl laps back to the keel of the whorl preceding; on a body whorl measuring 50 mm. in diameter, there are about 8 large spines on the keel; on the earlier whorls, the spines are numerous and very small, and steadily decrease in number as the whorls increase in size. Although the spiral sculpture is predominant on the first three whorls found, longitudinal ribs are present, also, and produce a cancellate sculpture as well as spines on the small keel. On the body whorl, the spiral sculpture is flat behind the keel; but in front of the keel lie 6 spiral welts in addition to the flat spirals. The outer lip is thin, bearing internally 5 lirae plus a single lira occurring just in front of the posterior canal; these are strongest a little back from the edge of the lip, and are short. The inner lip is callused; just in front of the deep posterior canal, the callus is thickened and forms a small plait entering the whorl but continuing only a short distance. On the columella, opposite the keel, is a single persistent plait; it is apparent in its full strength only inside beyond the mouth, and consequently shows well on broken specimens only. The anterior canal is short; the umbilicus is open.

The specimens in the older formations are usually much smaller than those in the younger.

Age.—Miocene.

Holotype Locality.—In Río Codore, 4.65 kilometers north and 550 meters west of Urumaco, District of Democracia, Falcón. (Also comon in the State of Falcón.)

Family VASIDÆ Adams**Genus XANCUS Bolton**

Xancus aviaguensis H. K. Hodson, n. sp.

Pl. 19, fig. 2

The shell is of medium size, slender, and bears the same orna-

mentation on all the whorls found. All of the specimens are fragmentary but are remarkably well preserved for the formation in which they occur. The whorls are short, carinated, and straight-sided; they carry a narrow, concave, presutural band ornamented with rather fine longitudinal threads crossed by a few rather faint spirals; the band terminates anteriorly in a sharp scalloped keel, which bear from 7 to 11 distinct scallops. There are obsolete spiral threads on the central part of an adult body whorl, and the constricted anterior portion and the anterior canal are covered with prominent spiral welts.

Age.—Upper Middle Oligocene.

Holotype Locality.—Loc. 2447, 830 meters east and 100 meters north of the northern house at Aviagua (Aviagua is 15.6 kilometers east and 1.4 south of Dabajuro), District of Buchivacoa, Falcón.

Xancus tirantensis H. K. Hodson, n. sp.

Pl. 21, figs. 1-3

The shell is of medium size, with shouldered, straight-sided whorls. The very young stages are unknown, but the neanic whorls carry 6 or 7 longitudinal nodes and several spiral threads. The spiral threads continue a short distance beyond the nodes, but soon become obsolete. After the nodes disappear, the whorls are shouldered with a narrow presutural band, which is not excavated and only obsoletely noded, if at all; sometimes this band forms a sharp corded shoulder and sometimes a rounded shoulder. Below the shoulder, the whorls are straight-sided and almost smooth; the anterior canal carries spiral cords.

This species resembles *X. peruvianus* Olsson³⁰, but the sutures of the Venezuelan form are more excavated, the sutural band is flatter and less noded, and the spiral cords of the anterior canal are smaller.

Age.—Oligocene - Lower Miocene.

Holotype Locality.—Loc. 2420, Cerro de Los Tirantes, 18.6 kilometers east and 940 meters south of Dabajuro church, District of Buchivacoa, Falcón. (Also from States of Lara and Falcón.)

³⁰Bull. Amer. Pal., vol. 14, 1928, p. 135, pl. 26, fig. 5.

Xancus falconensis H. K. Hodson, n. sp.

Pl. 22, figs. 1, 3

The shell is of medium size, slender, flat-whorled. The youngest whorls are unknown. The last 3 $1/2$ neanic whorls are strongly noded longitudinally below a narrow, flat band, which is just in front of the posterior suture; there are 5 or 6 nodes on each whorl; each neanic whorl bears about 5 primary spiral threads, between which secondary spirals rapidly appear and increase in strength as the whorls grow larger. The sculpture of the neanic stage dies out rather abruptly leaving the early adult whorls smooth except for a few, fine, spiral threads; the adult whorls are long, flat-sided, and bear only a trace of the shoulder produced by the posterior sinus. The later adult whorls have practically no spiral threads. The sutures are usually channeled. The posterior sinus is deep and narrow; below this, the lip is flat-sided to its anterior constriction. The mouth measures almost half of the length of the shell in the adult.

This species is more slender and flatter-whorled than *X. praeovoides* Maury³¹; on our species the nodes on the neanic whorls and the spiral threads disappear earlier.

In a collection of fossils from the Isthmus of Darien, made by the late Mr. Charles W. Yeakel, are several fairly well preserved specimens of *Xancus* which may be specifically identical to this Venezuelan form. The Darien form tends to have one more node on the neanic whorls and somewhat more persistent, fine, spiral threads. Mr. Yeakel's collection is among Prof. G. D. Harris's collections at Cornell University.

Age.—Lower and Middle Miocene.

Holotype Locality.—Loc. 2207, Cantaura, Cocodito area, District of Falcón, Falcón. (Also from various localities in the States of Falcón and Lara.)

Xancus colinensis H. K. Hodson, n. sp.

Pl. 21, fig. 4

This species is small, unless the specimens found as yet are all young, and easily recognized. The shell is slender, noded throughout its length and ornamented with fine spiral lines. The youngest whorls are unknown; the neanic whorls carry 5 nodes

³¹Bull. Amer. Pal., 1917, vol. 5, pp. 247-248, pl. 40, fig. 18.

(sometimes 6), and about 7 spiral threads. As the shell grows, the spiral threads become more numerous and the longitudinal nodes gradually less prominent, although there is no marked difference or marked boundary between the neanic and adult whorls. The presutural band is flat or only slightly excavated, and the whorls are flat-sided except for the nodes.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 185, 2.3 kilometers east and 750 meters north of La Vela de Coro lighthouse, District of Colina, Falcón. (Also from other Colina localities.)

Genus VASUM Link

Vasum quirosense F. Hodson, n. sp.

Pl. 23, figs. 2, 3, 5

The shell is small, wide for its height, and delicately sculptured. The tip of the protoconch is broken; only one whorl of the protoconch remains; there are about 6 subsequent whorls; the apex is acute and contrasts with the broad shoulder formed by the body whorl. The spire whorls bear about 7 tubercles each, and close-set, spiral threads on the exposed portion. The body whorl almost overlaps the shoulder of the preceding whorl, and the suture is very tortuous. Near the top of the body whorl is a wide shoulder and a spiral ridge bearing tubercles; the inferior tubercular ridge is almost continuous with the posterior spiral fold on the columella; between the shoulder and inferior tubercular ridges, there are 4 or 5 strong spiral threads with weaker spirals between them; spiral threads of various strengths cover the remaining portion of the body whorl; the spiral sculpture is crossed nearly at right angles by close-set growth lines, which are less pronounced than the spirals. The columella bears 4 plaits: the 2 posterior are strong, the 2 anterior are weaker and have the appearance of being a low, wide, anterior plait divided into 2 parts by a shallow groove. The outer lip bears about 5 elongate lirae of different lengths, the middle 3 being the longest.

Age.—Upper Oligocene.

Holotype Locality.—Loc. 6, Quirós, District of Miranda, Zulia.

Family MITRIDAE

Genus MITRA Martyn

Mitra quirosana F. Hodson, n. sp.

Pl. 20, figs. 3, 4

The shell is rather small, thin, and slender. There are about 1.5 whorl in the protoconch and 7.5 subsequent whorls. The sculpture consists of 4 sharp spiral cords between the sutures; on the last whorl, there are about 14 primary spiral cords with a smaller intercalary appearing between some of them; exteriorly, on the slightly twisted part of the anterior canal, there are about 6 oblique threads; the spiral sculpture is crossed by distinct growth lines. The aperture is rather narrow and more than half the length of the shell. On the columella, there are 4 plaits: the posterior 3 are strong and very oblique; the anterior one is much smaller. The sutures are distinct with a small shoulder in front of them.

This species is smaller than *M. silicata* Dall³² and the plaits are more oblique.

Age.—Upper Oligocene.

Holotype Locality.—Loc. 6, Quirós, District of Miranda, Zulía.

Mitra dariensis venezuelana F. Hodson, n. subsp.

Pl. 20, figs. 6, 7

Our subspecies differs from *M. dariensis* Brown and Pilsbry³³ by its larger size, and more abundant, pronounced sculpture. Even in the neanic stage, prominent secondary spiral cords have appeared in each interspace; on the body whorl, there are about 11 strong, primary spirals, with a strong secondary in the interspace above each; anteriorly a strong secondary may be replaced by two weaker threads. In the later neanic and adult stages, the corresponding whorl lengths in our subspecies are slightly longer than those in our material from Gatun, C. Z.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 185, 2.3 kilometers east and 750 meters north of La Vela de Coro lighthouse, District of Colina, Falcón.

³²Trans. Wagner Free Inst. Science, Philadelphia, 1890, vol. 3, part 1, pp. 93-94, pl. 4, fig. 11.

³³Proc. Acad. Nat. Sci. of Philadelphia, 1911, pp. 346-347, pl. 24, fig. 9.

Genus **CONOMITRA** Conrad**Conomitra lavelana** F. Hodson, n. sp.

Pl. 24, figs. 1-4, 7, 11

The shell is small, biconic, variable, and consists of about 7 whorls. There are 2 nuclear and 5 subsequent whorls. Both longitudinal and spiral ornamentation are prominent but variable. The number of longitudinal ribs on the last whorl in adult specimens varies from 17 to 23 and the number of spiral cords varies from 15 to 20; the spiral cords are wider than the channeled interspaces; on well preserved specimens, small nodes are former on the longitudinal ribs at the intersections with the spiral cords. There are 4 plaits on the columella; the anterior 2 are somewhat weaker and more closely spaced. The spire is more than half the length of the shell.

This species has prominent spiral ribbing instead of the apparent spiral grooving of *C. weeksi* (n. sp.); it also has a higher spire than *C. weeksi*. *C. caribbeana* Weisbord³⁴ is a larger shell with heavier sculpture and a more blunt spire.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 185, 2.3 kilometers east and 750 meters north of La Vela de Coro lighthouse, District of Colina, Falcón. (Also from other Colina localities.)

Conomitra lavelana falconensis F. Hodson, n. subsp.

Pl. 24, figs. 5, 9

The sculpture in this subspecies consists of strong longitudinal ribs and faint, indistinct, spiral cords; on the body whorl, there are about 13 longitudinal ribs and about 12 faint spiral cords with shallow interspaces about as wide or wider than the spiral cords. On the body whorl, the spirals become stronger anteriorly.

This rare subspecies is rather slender and megascopically has the appearance of being almost smooth except for longitudinal ribs.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 185, 2.3 kilometers east and 750 meters north of La Vela de Coro lighthouse, District of Colina, Falcón.

Conomitra weeksi F. Hodson, n. sp.

Pl. 24, figs. 6, 8.

The shell is biconic, plump, and has about 7 whorls. There

³⁴Bull. Amer. Pal., 1929, vol. 14, pp. 280-281, pl. 41, figs. 14, 15.

are usually 2 (sometimes 3) smooth nuclear whorls and about 5 (sometimes 4) subsequent whorls, which are ornamented with prominent longitudinal ribs cut by numerous spiral grooves. An average specimen shows about 17 longitudinal ribs and 27 spiral grooves on the body whorl. The aperture is narrow, and the anterior canal is slightly twisted; the columella carries 4 plaits, the anterior 2 are slightly weaker and more oblique. The spire is about $2/5$ of the length of the shell.

Named in honor of Mr. L. G. Weeks.

Age.—Upper Oligocene.

Holotype Locality.—Loc. 6, Quirós, District of Miranda, Zulia. (Also from District of Buchivacoa, Falcón.)

Family CANCELLARIIDAE Adams

Genus CANCELLARIA Lamarck

Cancellaria lavelana H. K. Hodson, n. sp.

Pl. 24, fig. 12

The shell is small, with about 5 rounded, only partly overlapping whorls. The sculpture is the common cancellate kind with the spirals more crowded on the anterior of the whorl and more widely spaced toward the posterior suture; the longitudinal costae are inconspicuous. The outer lip is somewhat thickened and carries about 11 internal lirae. The inner lip is callused; it bears 2 strong columellar plicae and, at the posterior, a fold, which does not extend far internally.

This species is small and easily distinguished by its shape due to the fact that the whorls do not lap far back on those preceding.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 185, 2.3 kilometers east and 750 meters north of La Vela de Coro lighthouse, District of Colina, Falcón.

Cancellaria paraguayensis H. K. Hodson, n. sp.

Pl. 24, fig. 10

The shell is of medium size and slender. The first 2 whorls are smooth; the succeeding whorls carry 13-17 longitudinal ribs and 5-6 primary spiral threads. On the sixth whorl appear a few secondary spirals, and on the body whorl more than half of the 13 primary spirals are separated by fine secondaries. The shell consists of about $7\frac{1}{2}$ rounded whorls; the longitudinal

ribs are situated farther apart on the adult whorls and extend the full length of the body whorl into the large umbilicus. The outer lip is thickened and carries about 11 internal lirae which continue into the shell as far as one can see. The inner lip is thinly callused so that some of the underlying exterior sculpture still shows through. There are 3 columellar plaits and a raised dot or small denticle on the callus between the posterior two.

Age.—Lower Miocene.

Holotype Locality.—Loc. 2207, Cantaura, Cocodito area, District of Falcón, Falcón.

Cancellaria urumacoensis H. K. Hodson, n. sp.

Pl. 18, figs. 2, 3

The shell is of medium size, with carinated, straight-sided whorls, which become almost smooth in the adult. The nuclear whorls are poorly preserved; they are followed by about 5 1/2 shouldered, straight-sided whorls carrying 18-22 longitudinal ribs crossed by spiral threads; before the last 2 smooth whorls, the spiral threads almost disappear and the longitudinal ribs become farther apart and more undulating until they disappear. All of the whorls have a narrow shoulder at the posterior suture. The body whorl carries a few faint spiral threads on the canal and anterior constricted portion. The outer lip is thin and carries about 11 internal lirae. The inner lip is callused and carries 2 sharp columellar plaits. Between these 2 plaits and near the umbilicus is a single raised denticle.

This species is easily distinguished by its shape and by the obsolete sculpture of the last 2 whorls.

Age.—Upper Middle Miocene.

Holotype Locality.—Loc. 70A, in Río Codore, 4.9 kilometers north and 380 meters west of Urumaco, District of Democracia, Falcón.

Cancellaria venezuelana H. K. Hodson, n. sp.

Pl. 23, figs. 1, 4

The shell is of medium size and remarkably variable. The first whorl (nuclear) is smooth, the second whorl in well preserved specimens bears about 10 longitudinal ribs; the third bears about 12 ribs and several spiral threads; the fourth whorl bears about 16 longitudinal ribs and about 6 spiral threads. At about the middle of the fifth whorl, the ribs become more widely separated and angulated near the top, forming a carina; there are about 12

longitudinal ribs on the fifth whorl. Six and one half whorls are the largest number found on a single specimen. The variation in this species occurs chiefly in the degree to which the whorls overlap; this makes specimens of the same number of whorls and with the same sculpture vary considerably in shape. The body whorl is carinated near the top; it carries about 12 longitudinal ribs which form small spines on the carina. Behind the carina, there are 5-8 spiral threads; in front of it occur about 12 primary threads with almost as many secondaries. The outer lip on every specimen is broken, but shows 14-16 internal lirae. The inner lip is callused and carries 3 columellar plaits, the anterior of which forms the edge of the anterior canal. Near the umbilicus, on the callus, and between the two posterior folds, are 3 little raised dots or denticles.

This species appears to be of the same general type as *C. hettneri* Anderson³⁵ but it is very difficult to be sure what the details of his form are from the figure and description. The Venezuelan form seems to have a less angular mouth and more spinous early whorls.

Age.—Upper Middle Miocene.

Holotype Locality.—Río Codore, 4.9 kilometers north and 380 meters west of Urumaco, District of Democracia, Falcón. (Also from Districts of Colina, Miranda and Democracia, Falcón.)

³⁵Proc. Cal. Acad. Sci., 1929, vol. 18, pp. 114-115, pl. 10, figs. 5, 6

EXPLANATION OF PLATES

PLATE I

Plates furnished by Dr. and Mrs. Hodson

PLATE 1

Figure		Page
1.	<i>Periploma venezuelana</i> H. K. Hodson, n. sp. Paratype from Loc. No. 86; fragment of right valve, tipped to show strong buttress, length 14 mm.	7
2.	<i>Periploma venezuelana</i> H. K. Hodson, n. sp. Holotype; left valve, length 54 mm. (somewhat broken), height 41.5 mm.; diameter of both valves 18 mm. Same specimen as fig. 8.	7
3.	<i>Periploma venezuelana wiedenmayeri</i> H. K. Hodson, n. subsp. . Holotype; right valve, length 48 mm., height 38 mm.; diameter of both valves 12.5 mm. (somewhat crushed). Same specimen as figs. 5 and 7.	7
4.	<i>Cyrena falconensis</i> H. K. Hodson, n. sp. Holotype; length 19 mm., height 18 mm., diameter of right valve 6.5 mm. Same specimen as pl. 2, fig. 11.	8
5.	<i>Periploma venezuelana wiedenmayeri</i> H. K. Hodson, n. subsp. Holotype; left valve; same specimen as figs. 3 and 7.	7
6.	<i>Periploma venezuelana</i> H. K. Hodson, n. sp. Paratype from Loc. No. 86; length 52 mm., height 39 mm., diam- eter of left valve 8 mm. (somewhat crushed).	7
7.	<i>Periploma venezuelana wiedenmayeri</i> H. K. Hodson, n. subsp. Holotype; posterior view, same specimen as figs. 3 and 5.	7
8.	<i>Periploma venezuelana</i> H. K. Hodson, n. sp. Holotype; posterior view, same specimen as fig. 2.	7



PLATE II

PLATE 2

Figure		Page
1.	<i>Lucina (Lucinisca) mirandana</i> F. Hodson, n. sp. Holotype; length 8.2., height 7.6 mm., diameter of left valve 2.2 mm. Same specimen as fig. 2.	8
2.	<i>Lucina (Lucinisca) mirandana</i> F. Hodson, n. sp. Holotype; same specimen as fig. 1.	8
3.	<i>Lucina (Lucinisca) mirandana</i> F. Hodson, n. sp. Paratype from Loc. No. 6; length 8.2 mm., height 7.6 mm., diameter of right valve 2.1 mm. Same specimen as fig. 8.	8
4.	<i>Lucina (Lucinisca) mirandana</i> F. Hodson, n. sp. Paratype from Loc. No. 6, dorsal view; length 6 mm., height 5.5 mm., diameter of both valves 3 mm. Same specimen as fig. 5.	8
5.	<i>Lucina (Lucinisca) mirandana</i> F. Hodson, n. sp. Paratype; same specimen as fig. 4.	8
6.	<i>Lucina (Lucinisca) mirandana</i> F. Hodson, n. sp. Paratype from Loc. No. 6; length 5.4 mm., height 5.1 mm., diameter of left valve 1.5 mm.	8
7.	<i>Lucina (Lucinisca) mirandana</i> F. Hodson, n. sp. Paratype from Loc. No. 6; length 4.6 mm., height 4.1 mm., diameter of right valve 1.1 mm.	8
8.	<i>Lucina (Lucinisca) mirandana</i> F. Hodson, n. sp. Paratype; same specimen as fig. 3.	8
9.	<i>Lucina (Lucinisca) mirandana</i> F. Hodson, n. sp. Paratype from Loc. No. 6; length 6 mm., height 5.6 mm., diameter of right valve 1.5 mm.	8
10.	<i>Cyrena falconensis</i> H. K. Hodson, n. sp. Paratype from about 5 kilometers northeast of Cuesta de Bisures, Buchivacoa; elongated form; length 21 mm., height 19 mm., diameter of left valve 7 mm.	8
11.	<i>Cyrena falconensis</i> H. K. Hodson, n. sp. Holotype; length 19 mm., height 18 mm., diameter of right valve 6.5 mm. Same specimen as pl. 1, fig. 4.	8

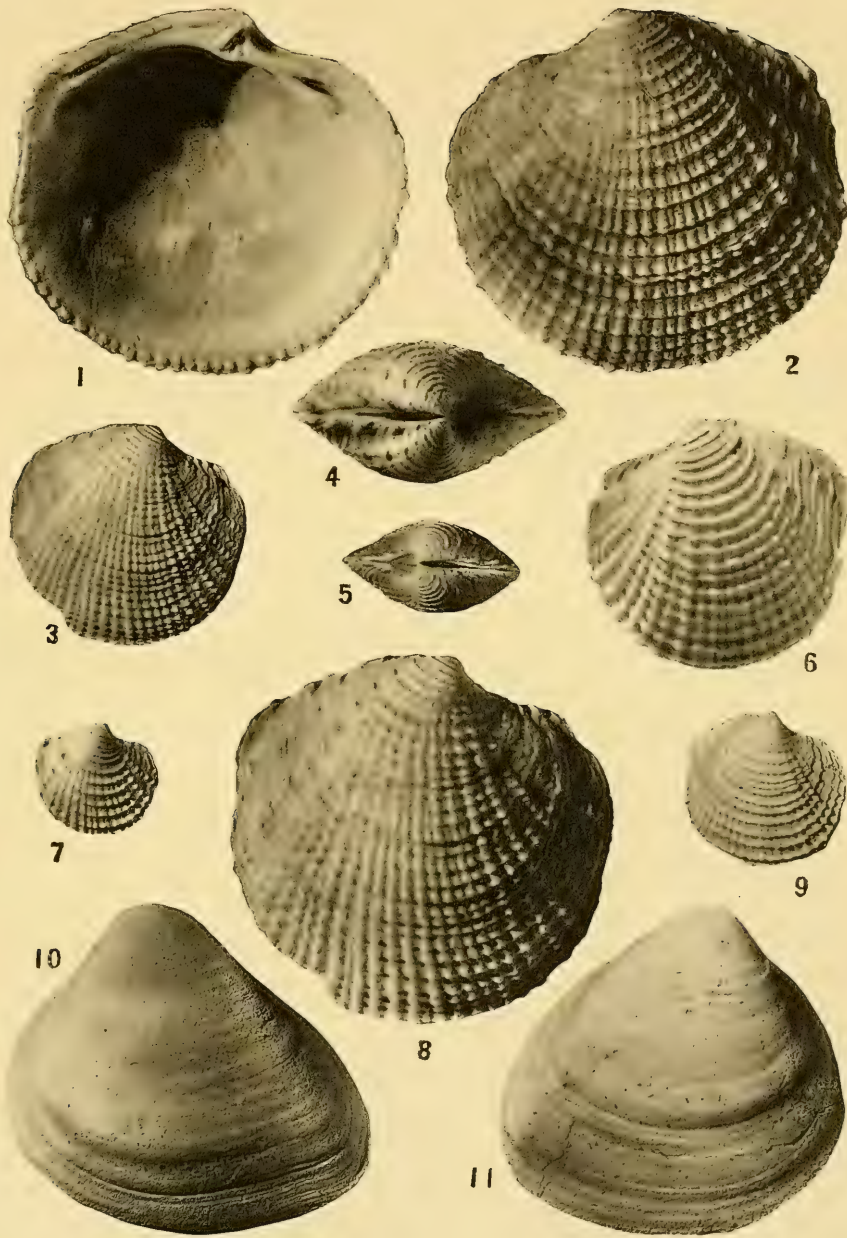


PLATE III

PLATE 3

Figure	Page
1. <i>Dosinia falconensis</i> H. K. Hodson, n. sp.	11
Holotype; length 28 mm., height 30 mm., diameter of left valve 9.8 mm. Same specimen as figs. 2 and 7.	
2. <i>Dosinia falconensis</i> H. K. Hodson, n. sp.	11
Holotype; dorsal view. Same specimen as figs. 1 and 7.	
3. <i>Pitaria buenavistana buchivacoana</i> H. K. Hodson, n. subsp.	9
Holotype; left valve; length 19.2 mm., height 17 mm., diameter of both valves 12 mm. Same specimen as fig. 5.	
4. <i>Pitaria rosea wiedenmayeri</i> H. K. Hodson, n. subsp.	10
Paratype; from near Urumaco; length 45 mm. (broken), height 39 mm., diameter of right valve 11 mm. Same specimen as fig. 9.	
5. <i>Pitaria buenavistana buchivacoana</i> H. K. Hodson, n. subsp.	9
Holotype. Same specimen as fig. 3.	
6. <i>Dosinia falconensis</i> H. K. Hodson, n. sp.	11
Paratype from about 5 kilometers northeast of Cuesta de Bisures, Buchivacoa; length 25.8 mm., height 27 mm., diameter of right valve 10 mm.	
7. <i>Dosinia falconensis</i> H. K. Hodson, n. sp.	11
Holotype. Same specimen as figs. 1 and 2.	
8. <i>Pitaria buenavistana buchivacoana</i> H. K. Hodson, n. subsp.	9
Paratype from Loc. No. 6; length 14.5 mm., height 12 mm., diameter of right valve 4.2 mm.	
9. <i>Pitaria rosea wiedenmayeri</i> H. K. Hodson, n. subsp.	10
Paratype. Same specimen as fig. 4.	
10. <i>Pitaria rosea wiedenmayeri</i> H. K. Hodson, n. subsp.	10
Holotype; length 41.5 mm., height 36 mm., diameter of left valve 12 mm.	

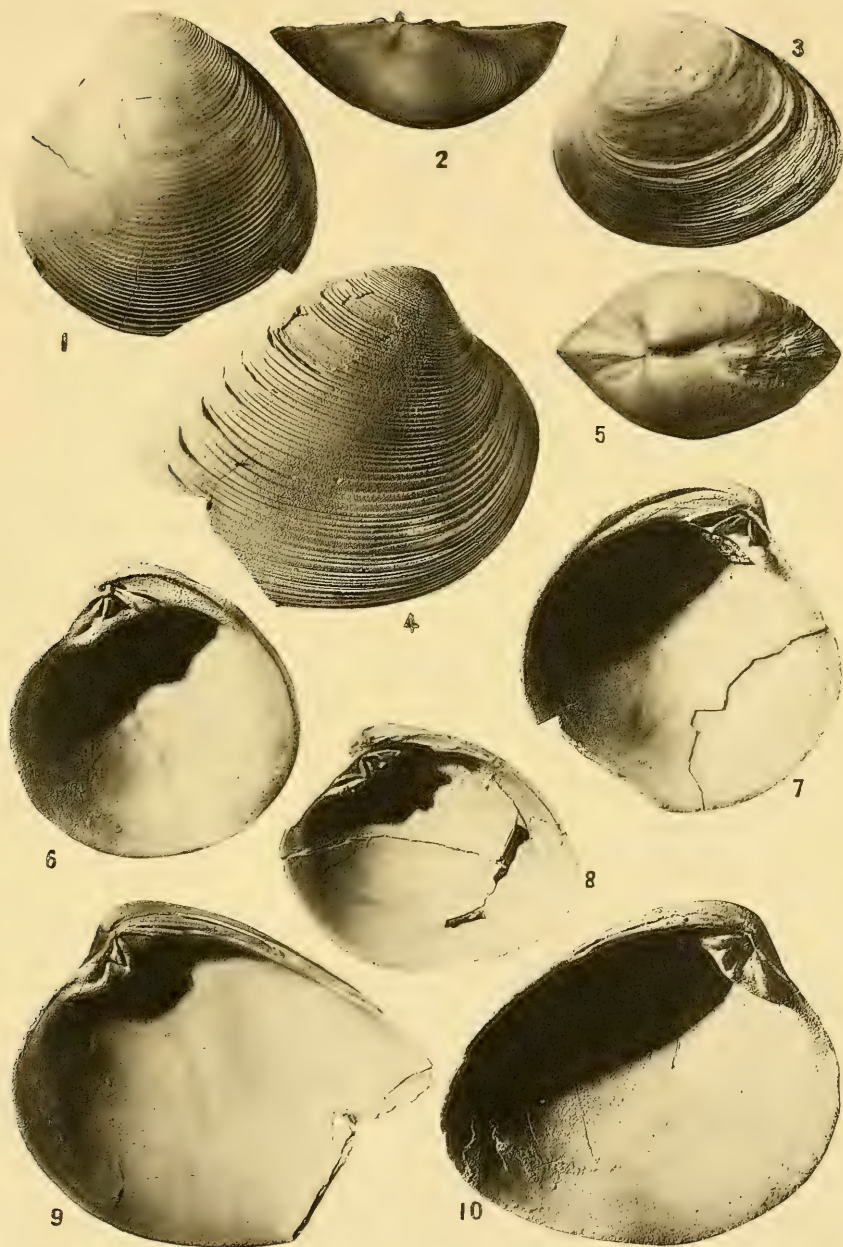


PLATE IV

PLATE 4

Figure	Page
1. <i>Metis falconensis</i> H. K. Hodson, n. sp.	13
Holotype; right valve; length 52 mm. (slightly broken), height 44.5 mm., diameter of both valves 21.2 mm. Same specimen as fig. 4.	
2. <i>Iphigenia olssoni</i> H. K. Hodson, n. sp.	19
Paratype from holotype locality; length 32 mm. (broken), height 23.8 mm., diameter of right valve 10 mm.	
3. <i>Iphigenia olssoni</i> H. K. Hodson, n. sp.	19
Holotype; length 38 mm., height 25.5 mm., diameter of left valve 8.8 mm. Same specimen as fig. 6.	
4. <i>Metis falconensis</i> H. K. Hodson, n. sp.	13
Holotype; left valve. Same specimen as fig. 1.	
5. <i>Pitaria (Lamelliconcha) circinata</i> (Born)	10
From near Urumaco; length 31 mm., height 26.5 mm., diameter of left valve 8.5 mm.	
6. <i>Iphigenia olssoni</i> H. K. Hodson, n. sp.	19
Holotype. Same specimen as fig. 3.	
7. <i>Pitaria (Lamelliconcha) circinata</i> (Born)	10
Recent from Falcón coast; length 34.5 mm., height 28.5 mm., diameter of left valve 10 mm.	

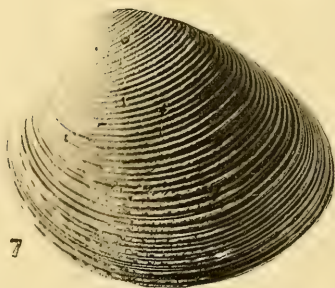
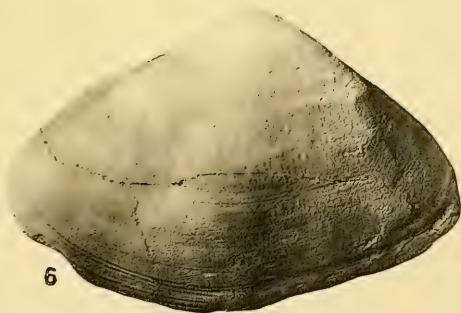
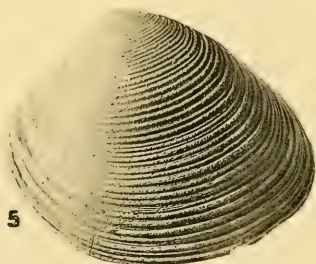
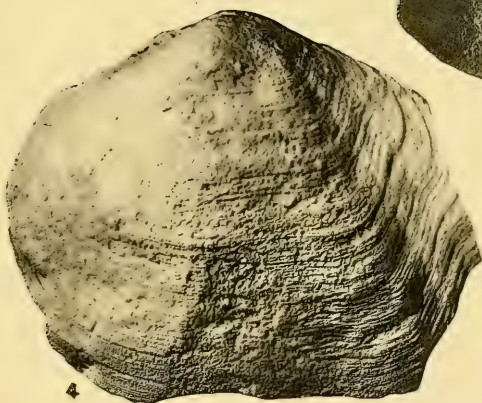
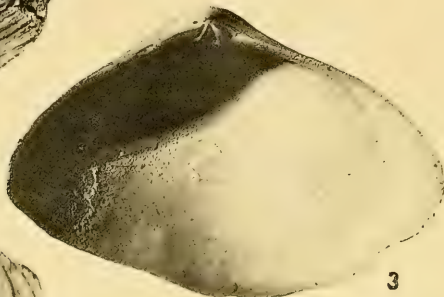
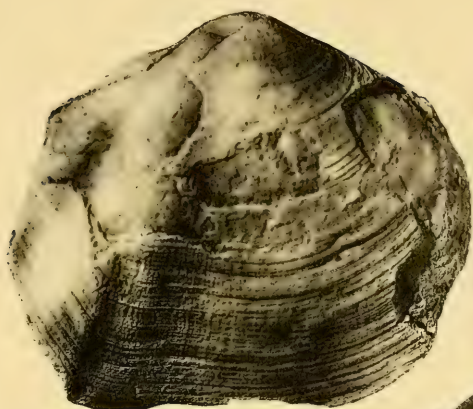


PLATE V

PLATE 5

Figure	Page
1. <i>Tellina</i> (<i>Moerella</i>) <i>quirosana</i> H. K. Hodson, n. sp.	12
Holotype; length 14.2 mm., height 8.2 mm., diameter of right valve 2 mm. Same specimen as fig. 4.	
2. <i>Tellina</i> (<i>Moerella</i>) <i>quirosana</i> H. K. Hodson, n. sp.	12
Paratype from Loc. No. 6; length 15 mm. (broken), height 9 mm., diameter of left valve 2.5 mm.	
3. <i>Tellina</i> (<i>Moerella</i>) <i>quirosana</i> H. K. Hodson, n. sp.	12
Paratype from Loc. No. 6; length 12 mm., height 7 mm., diameter of left valve 2 mm.	
4. <i>Tellina</i> (<i>Moerella</i>) <i>quirosana</i> H. K. Hodson, n. sp.	12
Holotype. Same specimen as fig. 1.	
5. <i>Tellina</i> (<i>Moerella</i>) <i>paraguanensis</i> H. K. Hodson, n. sp.	12
Paratype from Loc. No. 2207; length 27.6 mm., height 17.2 mm., diameter of right valve 4 mm.	
6. <i>Tellina</i> (<i>Moerella</i>) <i>paraguanensis</i> H. K. Hodson, n. sp.	12
Holotype; length 27.3 mm., height 19 mm., diameter of left valve 4.2 mm. Same specimen as fig. 11.	
7. <i>Tellina</i> (<i>Angulus</i>) <i>democraciana</i> H. K. Hodson, n. sp.	13
Holotype; left valve; length of fragment 29.1 mm. Same specimen as figs. 8 and 10.	
8. <i>Tellina</i> (<i>Angulus</i>) <i>democraciana</i> H. K. Hodson, n. sp.	13
Holotype; right valve; length of fragment 34.8 mm. Same specimen as figs. 7 and 10.	
9. <i>Tellina</i> (<i>Angulus</i>) <i>democraciana</i> H. K. Hodson, n. sp.	13
Paratype from holotype locality; length 44 mm., height 28 mm., diameter of left valve 6.5 mm.	
10. <i>Tellina</i> (<i>Angulus</i>) <i>democraciana</i> H. K. Hodson, n. sp.	13
Holotype; dorsal view; diameter of both valves 8 mm. Same specimen as figs. 7 and 8.	
11. <i>Tellina</i> (<i>Moerella</i>) <i>paraguanensis</i> H. K. Hodson, n. sp.	12
Holotype. Same specimen as fig. 6.	

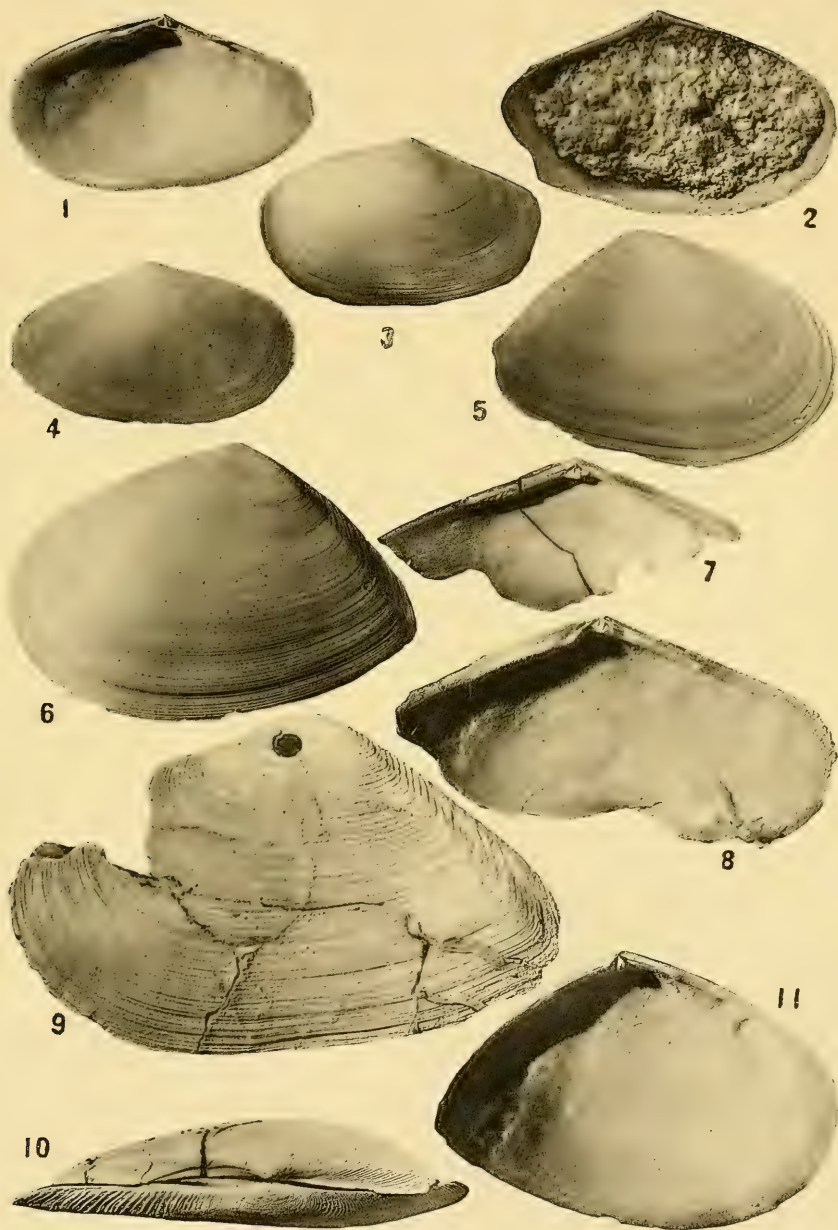


PLATE VI

PLATE 6

Figure	Page
1. <i>Macoma</i> (<i>Psammacoma</i>) <i>falconensis</i> H. K. Hodson, n. sp.	16
Paratype; from holotype locality; length 35.5 mm. (broken), height 23 mm., diameter of left valve 5 mm.	
2. <i>Macoma</i> (<i>Psammacoma</i>) <i>gatunensis</i> Toula	16
From Gatun, C. Z., figured for comparison with <i>M. falconensis</i> H. K. Hodson, n. sp.; length 38 mm., height 21 mm., diameter of left valve 5 mm.	
3. <i>Macoma</i> (<i>Psammacoma</i> ?) <i>democraciana</i> H. K. Hodson, n. sp.	15
Holotype; right valve; length 53 mm., height 37 mm., diameter of both valves 15 mm.	
4. <i>Macoma</i> (<i>Psammacoma</i> ?) <i>democraciana</i> H. K. Hodson, n. sp.	15
Paratype; from holotype locality; left valve; length 42 mm., height 28.2 mm., diameter of both valves 13 mm.	
5. <i>Macoma</i> (<i>Psammacoma</i> ?) <i>democraciana</i> H. K. Hodson, n. sp.	15
Paratype from near Urumaco; length 54.5 mm. (broken), height 39 mm. (broken), diameter of left valve 7.5 mm.	
6. <i>Macoma</i> (<i>Psammacoma</i>) <i>falconensis</i> H. K. Hodson, n. sp.	16
Holotype; left valve; length 42 mm., height 24 mm., diameter of both valves 11 mm.	
7. <i>Macoma</i> (<i>Psammacoma</i>) <i>falconensis</i> H. K. Hodson, n. sp.	16
Paratype; from holotype locality; crushed right valve; length 46.5 mm., height 28 mm., diameter about 7.5 mm.	

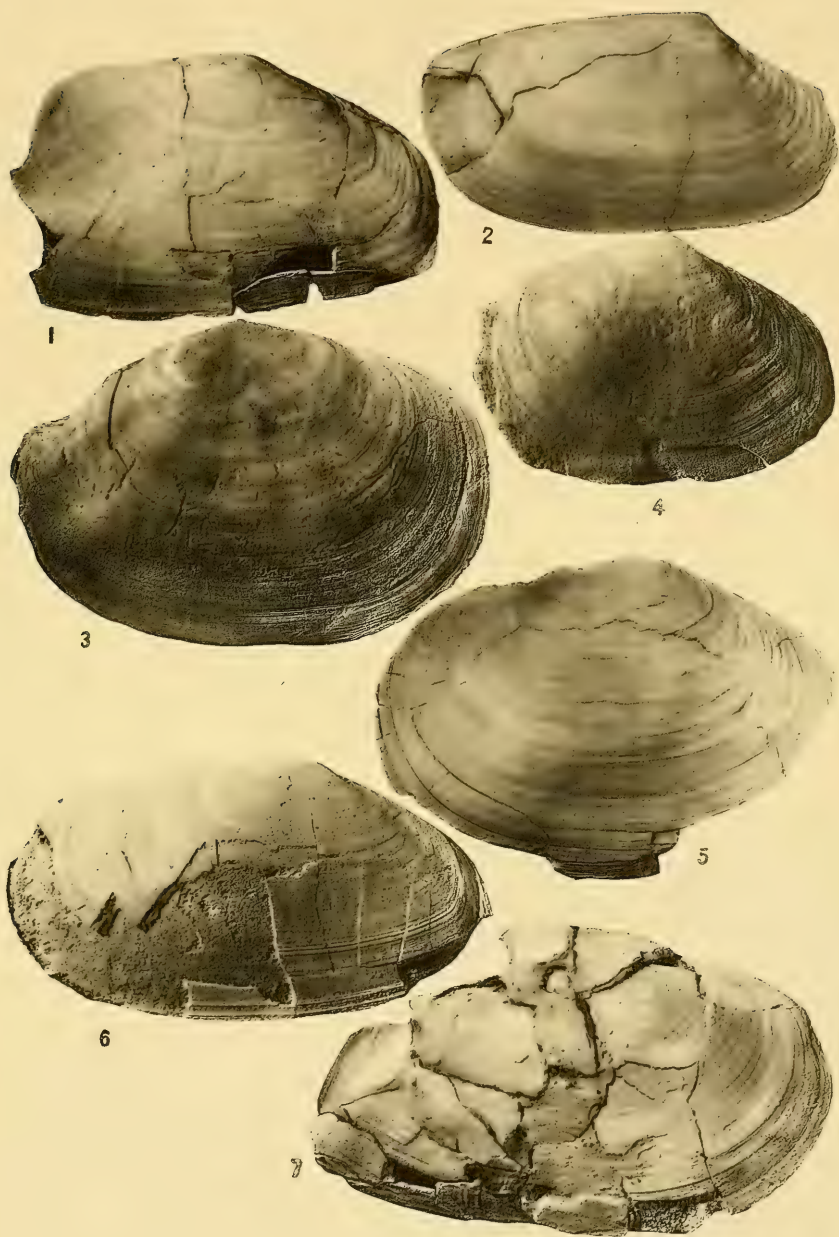


PLATE VII

PLATE 7

Figure	Page
1. <i>Donax buchivacoana</i> H. K. Hodson, n. sp.	18
Holotype; length 42.3 mm., height 25.5 mm., diameter of left valve 7 mm.	
2. <i>Donax palmasensis</i> H. K. Hodson, n. sp.	19
Holotype; left valve; length 17 mm., height 9 mm., diameter of both valves 7 mm. Same specimen as fig. 8.	
3. <i>Metis barba wiedenmayeri</i> H. K. Hodson, n. subsp.	14
Holotype; right valve; length 46 mm., height 40 mm., diameter of both valves 19 mm.	
4. <i>Metis barba wiedenmayeri</i> H. K. Hodson, n. subsp.	14
Paratype, from holotype locality; left valve; length 51.5 mm., height 45 mm., diameter of both valves 20.5 mm.	
5. <i>Labiosa undulata gardnerae</i> Spieker	21
From near Urumaco; right valve; length 47 mm., height 35 mm., diameter of both valves 23 mm.	
6. <i>Labiosa (Raeta) undulata</i> Gould	21
From near Urumaco; left valve; length 57 mm. (broken), height 53 mm., diameter of both valves 31 mm. (somewhat crushed).	
7. <i>Labiosa undulata mirandana</i> H. K. Hodson, n. subsp.	22
Holotype; right valve; length 23 mm. (broken), height 19 mm., diameter of both valves 13 mm. (somewhat crushed).	
8. <i>Donax palmasensis</i> H. K. Hodson, n. sp.	19
Holotype; dorsal view. Same specimen as fig. 2.	

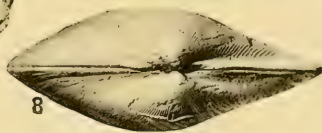
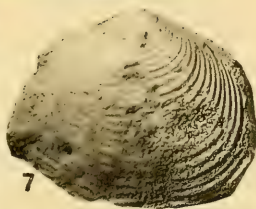
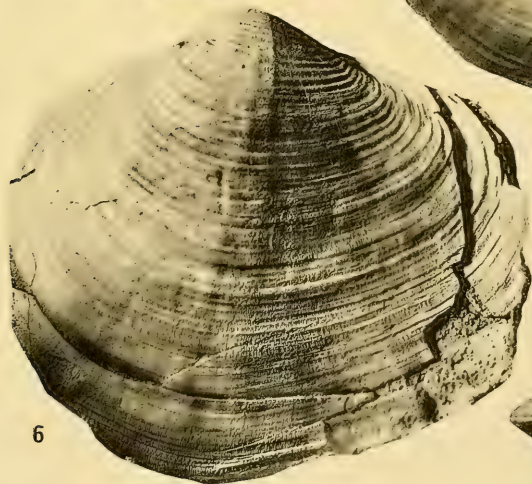
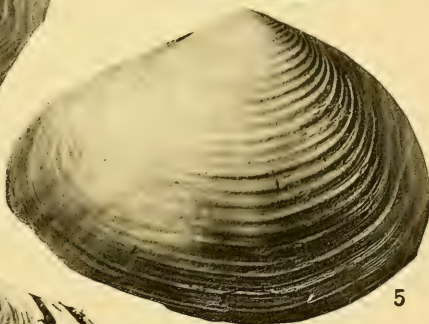
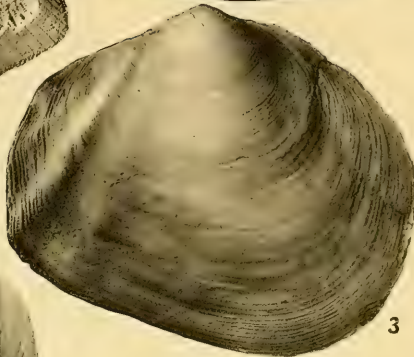
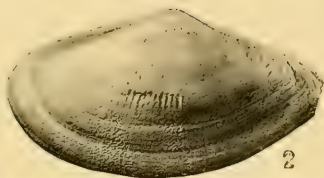
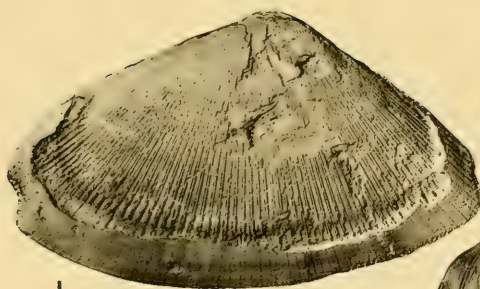


PLATE VIII

PLATE 8

Figure	Page
1. <i>Donax wiedenmayeri</i> H. K. Hodson, n. sp.	18
Holotype; length 51 mm., height 29 mm., diameter of right valve 9 mm. Same specimen as fig. 7.	
2. <i>Donax wiedenmayeri</i> H. K. Hodson, n. sp.	18
Paratype; from near Tres Personas, Buchivacoa; young specimen; length 28.5 mm., height 16 mm., diameter of left valve 4 mm.	
3. <i>Donax wiedenmayeri falconensis</i> H. K. Hodson, n. subsp.	18
Paratype; from holotype locality; young specimen; length 29.4 mm., height 15 mm., diameter of left valve 4.2 mm.	
4. <i>Donax wiedenmayeri falconensis</i> H. K. Hodson, n. subsp.	18
Holotype; length 47 mm., height 23.2 mm., diameter of right valve 7.4 mm.	
5. <i>Semele laevis costaricensis</i> Olsson	17
From near Urumaco; length 69 mm., height 53 mm., diameter of right valve 13 mm.	
6. <i>Corbula</i> (<i>Caryocorbula</i>) <i>buenavistana</i> F. Hodson, n. sp.	24
Paratype; from near holotype locality; dorsal view; length 17.5 mm., height 11 mm., diameter of left valve 6.2 mm. Same specimen as pl. 12, fig. 11.	
7. <i>Donax wiedenmayeri</i> H. K. Hodson, n. sp.	18
Holotype. Same specimen as fig. 1.	





PLATE IX

PLATE 9

Figure		Page
1.	<i>Semele zuliana</i> H. K. Hodson, n. sp. Holotype; length 13 mm., height 10 mm., diameter of right valve 2 mm. Same specimen as fig. 3.	17
2.	<i>Semele zuliana</i> H. K. Hodson, n. sp. Paratype, from Loc. No. 6; length 10.3 mm., height 7.9 mm., diameter of left valve 1.5 mm.	17
3.	<i>Semele zuliana</i> H. K. Hodson, n. sp. Holotype. Same specimen as fig. 1.	17
4.	<i>Semele zuliana</i> H. K. Hodson, n. sp. Paratype, from Loc. No. 6; length 13 mm., height 9.3 mm., dia- meter of left valve 2.3 mm.	17
5.	<i>Mactra (Mactrotoma) quirosana</i> H. K. Hodson, n. sp. Paratype, from Loc. No. 6; length of fragment of left valve 10 mm.	20
6.	<i>Mactra californica maracaibensis</i> H. K. Hodson, n. subsp. Holotype, length 27 mm., height 16.5 mm., diameter of right valve 3.7 mm.	20
7 / 9.	<i>Mactra (Mactrotoma) quirosana</i> H. K. Hodson, n. sp. Holotype; dorsal view; length 18 mm., height 13.5 mm., dia- meter of left valve 4.2 mm. Same specimen as fig. 9.	20
8.	<i>Semele quirosana</i> H. K. Hodson, n. sp. Holotype; length 25.5 mm., height 19 mm., diameter of right valve 5.5 mm.	17
9.	<i>Mactra (Mactrotoma) quirosana</i> H. K. Hodson, n. sp. Holotype. Same specimen as fig. 7.	20
10.	<i>Corbula (Caryocorbula) quirosana</i> F. Hodson, n. sp. Paratype, from Loc. No. 6; length 7 mm., height 5 mm., dia- meter of right valve 2 mm.	25
11.	<i>Corbula (Caryocorbula) quirosana</i> F. Hodson, n. sp. Holotype, length 8.4 mm., height 5.8 mm., diameter of left valve 2.5 mm. Same specimen as fig. 15.	25
12.	<i>Semele quirosana</i> H. K. Hodson, n. sp. Paratype, from Loc. No. 6; length of fragment of right valve 19.6 mm.	17
13.	<i>Corbula (Caryocorbula) quirosana</i> F. Hodson, n. sp. Paratype, from Loc. No. 6; length 7 mm., height 4.7 mm., dia- meter of both valves 3.2. Same specimen as figs. 17 and 18.	25
14.	<i>Corbula (Caryocorbula) quirosana</i> F. Hodson, n. sp. Paratype, from Loc. No. 6; length 7 mm., height 5 mm., dia- meter of right valve 2.1 mm.	25
15.	<i>Corbula (Caryocorbula) quirosana</i> F. Hodson, n. sp. Holotype. Same specimen as fig. 11.	25
16.	<i>Corbula (Caryocorbula) quirosana</i> F. Hodson, n. sp. Paratype, from Loc. No. 6; length 7.3 mm., height 5.3 mm., dia- meter of right valve 2.3 mm.	25
17.	<i>Corbula (Caryocorbula) quirosana</i> F. Hodson, n. sp. Paratype, dorsal view. Same specimen as figs. 13 and 18.	25
18.	<i>Corbula (Caryocorbula) quirosana</i> F. Hodson, n. sp. Paratype, ventral view. Same specimen as figs. 13 and 17.	25
19.	<i>Mactra californica maracaibensis</i> H. K. Hodson, n. subsp. Paratype, from holotype locality; left valve; length as shown 20 mm.	20

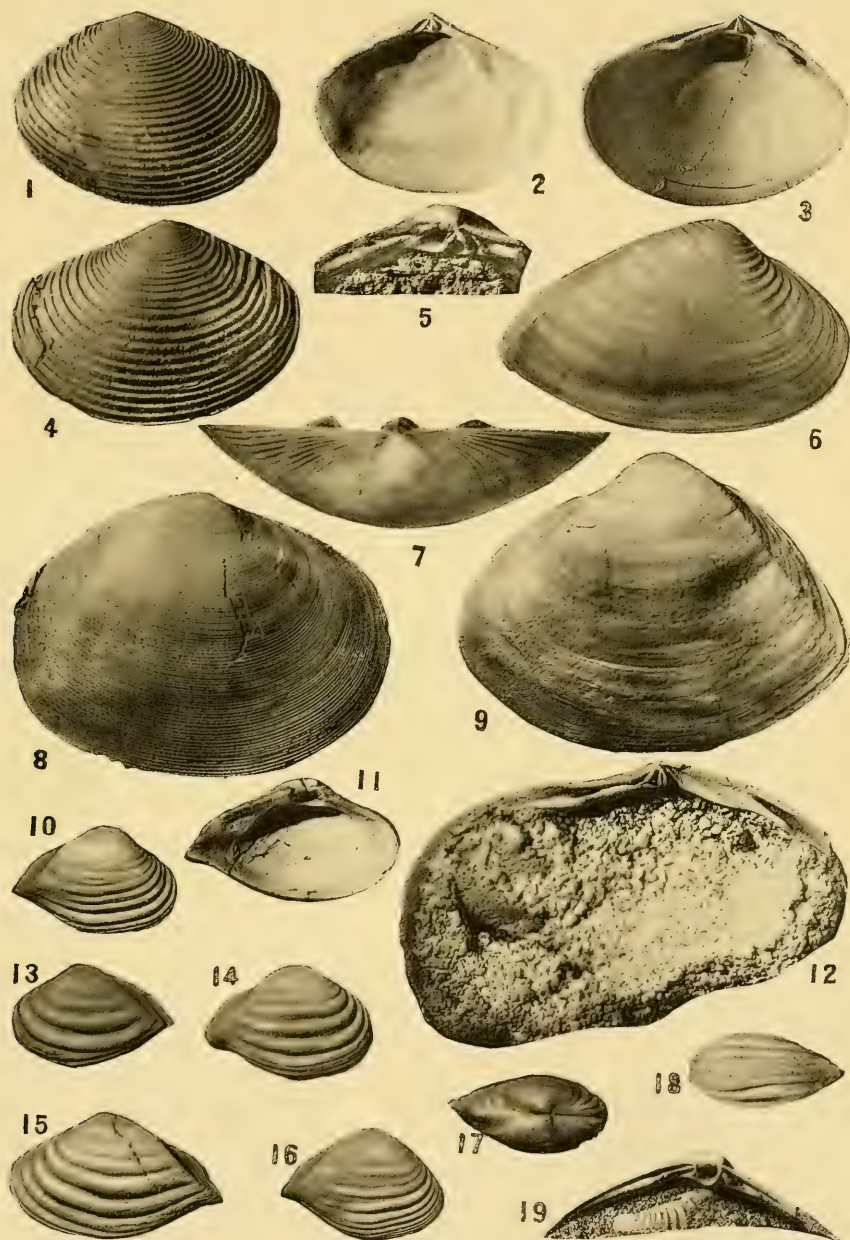


PLATE X

PLATE 10

Figure	Page
1. <i>Corbula (Corbula) zuliana</i> F. Hodson, n. sp.	22
Paratype; from Loc. No. 6; left valve; length (right valve) 3.2 mm., height 3.1 mm., diameter of both valves 2 mm. Same specimen as fig. 2.	
2. <i>Corbula (Corbula) zuliana</i> F. Hodson, n. sp.	22
Paratype; right valve. Same specimen as fig. 1.	
3. <i>Corbula (Corbula) zuliana</i> F. Hodson, n. sp.	22
Holotype; length 5.6 mm., height 5.4 mm., diameter of right valve 2.5 mm. Same specimen as fig. 5.	
4. <i>Corbula (Corbula) carrizalana</i> F. Hodson, n. sp.	23
Holotype; length 9.7 mm., height 7.4 mm., diameter of left valve 3.8 mm.	
5. <i>Corbula (Corbula) zuliana</i> F. Hodson, n. sp.	22
Holotype. Same specimen as fig. 3.	
6. <i>Corbula (Corbula) carrizalana</i> F. Hodson, n. sp.	23
Paratype; from Loc. No. 185; length 12.3 mm., height 12 mm., diameter of right valve 6.5 mm. Same specimen as fig. 9.	
7. <i>Corbula (Corbula) carrizalana</i> F. Hodson, n. sp.	23
Paratype; from Loc. No. 185; length 11.7 mm., height 11.7 mm., diameter of right valve 6.4 mm.	
8. <i>Corbula (Corbula) carrizalana</i> F. Hodson, n. sp.	23
Paratype; from Loc. No. 185; length 10.2 mm., height 10 mm., diameter of right valve 6 mm.	
9. <i>Corbula (Corbula) carrizalana</i> F. Hodson, n. sp.	23
Paratype. Same specimen as fig. 6.	
10. <i>Strombina falconensis</i> H. K. Hodson, n. sp.	28
Holotype; length 26.5 mm. (broken), greatest diameter 10 mm.	
11. <i>Strombina falconensis</i> H. K. Hodson, n. sp.	28
Paratype; from Loc. No. 185; length 24.5 mm. (broken), greatest diameter 10.2 mm.	
12. <i>Strombina quirosana</i> H. K. Hodson, n. sp.	27
Holotype; length 7 mm., greatest diameter 3.4 mm. Same specimen as fig. 13.	
13. <i>Strombina quirosana</i> H. K. Hodson, n. sp.	27
Holotype. Same specimen as fig. 12.	

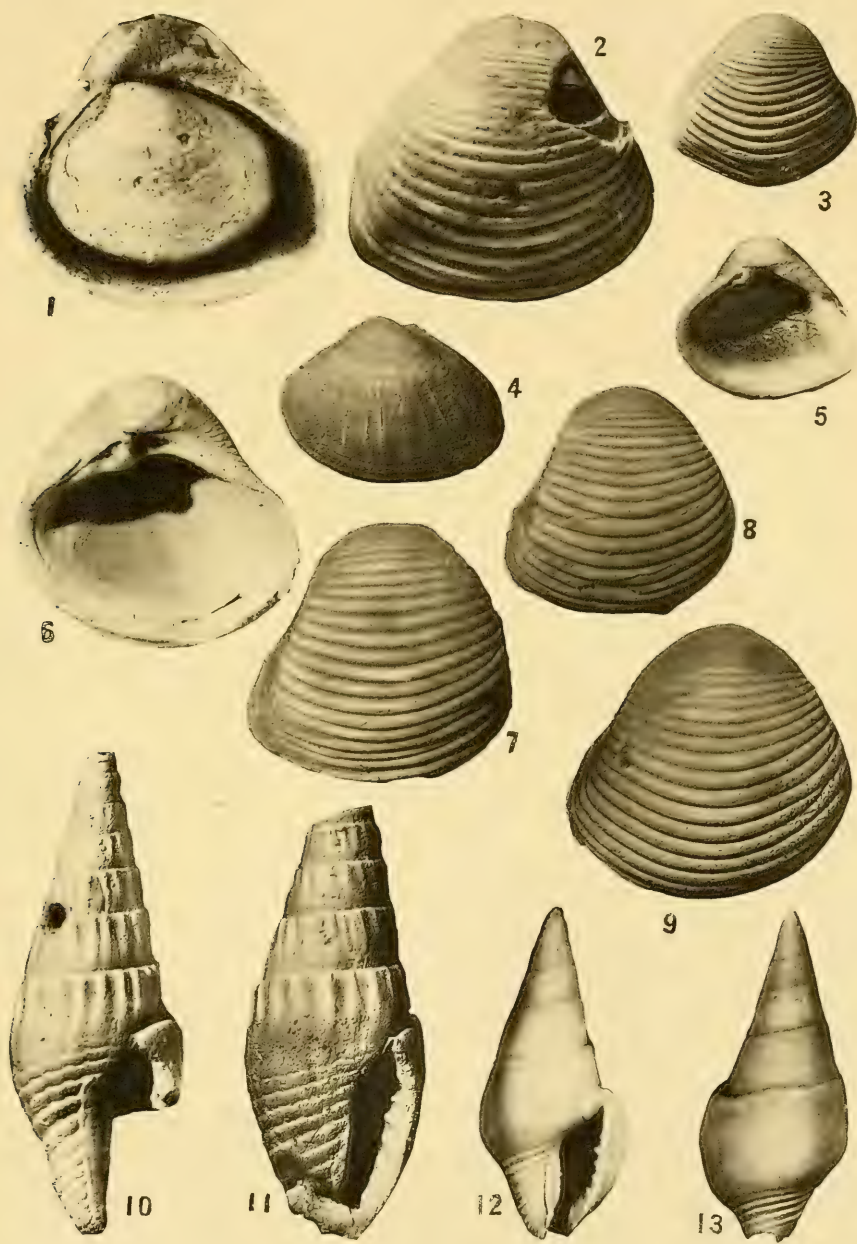


PLATE XI

PLATE 11

Figure	Page
1. <i>Corbula</i> (<i>Caryocorbula</i>) <i>democraciana</i> F. Hodson, n. sp.	26
Holotype; left valve; length 22.5 mm., height 13.5 mm., diameter of both valves 10.7 mm. Same specimen as figs. 3 and 6.	
2. <i>Corbula</i> (<i>Caryocorbula</i>) <i>democraciana</i> F. Hodson, n. sp.	26
Paratype; from Loc. No. 1255; length 21 mm., height 13.3 mm., diameter of right valve 6.2 mm. Same specimen as fig. 5.	
3. <i>Corbula</i> (<i>Caryocorbula</i>) <i>democraciana</i> F. Hodson, n. sp.	26
Holotype; dorsal view. Same specimen as figs. 1 and 6.	
4. <i>Corbula</i> (<i>Caryocorbula</i>) <i>democraciana</i> F. Hodson, n. sp.	26
Paratype; from Loc. No. 185; length 21.4 mm., height 13 mm., diameter of left valve 5 mm.	
5. <i>Corbula</i> (<i>Caryocorbula</i>) <i>democraciana</i> F. Hodson, n. sp.	26
Paratype; dorsal view. Same specimen as fig. 2.	
6. <i>Corbula</i> (<i>Caryocorbula</i>) <i>democraciana</i> F. Hodson, n. sp.	26
Holotype; right valve. Same specimen as figs. 1 and 3.	
7. <i>Corbula</i> (<i>Aloidis</i>) <i>gatunensis</i> Toul.	27
From Loc. 193; greatest length 23.2 mm., height 19 mm., diameter of right valve 9 mm.	
8. <i>Strombina colinensis</i> H. K. Hodson, n. sp.	29
Holotype; length 23 mm., greatest diameter 10 mm.	



PLATE XII

PLATE 12

Figure	Page
1. <i>Corbula</i> (<i>Caryocorbula</i>) <i>urumacoensis</i> F. Hodson, n. sp.	25
Holotype; dorsal view; length 18 mm., height 11 mm., diameter of both valves 11 mm. (valves not closed). Same specimen as figs. 4, 6, and 7.	
2. <i>Corbula</i> (<i>Caryocorbula</i>) <i>urumacoensis</i> F. Hodson, n. sp.	25
Paratype, from Loc. No. 86; dorsal view; length 17.2 mm., height 9.8 mm., diameter of both valves 8 mm. Same specimen as fig. 5.	
3. <i>Corbula</i> (<i>Caryocorbula</i>) <i>urumacoensis</i> F. Hodson, n. sp.	25
Paratype, from Loc. No. 297; length 14 mm., height 7.9 mm., diameter of left valve 4.3 mm.	
4. <i>Corbula</i> (<i>Caryocorbula</i>) <i>urumacoensis</i> F. Hodson, n. sp.	25
Holotype; right valve. Same specimen as figs. 1, 6, and 7.	
5. <i>Corbula</i> (<i>Caryocorbula</i>) <i>urumacoensis</i> F. Hodson, n. sp.	25
Paratype; right valve. Same specimen as fig. 2.	
6. <i>Corbula</i> (<i>Caryocorbula</i>) <i>urumacoensis</i> F. Hodson, n. sp.	25
Holotype; ventral view. Same specimen as figs. 1, 4, and 7.	
7. <i>Corbula</i> (<i>Caryocorbula</i>) <i>urumacoensis</i> F. Hodson, n. sp.	25
Holotype; left valve. Same specimen as figs. 1, 4, and 6.	
8. <i>Corbula</i> (<i>Caryocorbula</i>) <i>buenavistana</i> F. Hodson, n. sp.	24
Holotype; length 20 mm., height 13 mm., diameter of left valve 6 mm. Same specimen as figs. 10 and 13.	
9. <i>Corbula</i> (<i>Caryocorbula</i>) <i>buenavistana</i> F. Hodson, n. sp.	24
Paratype, from Loc. No. 149; length 18.8 mm., height 12.5 mm., diameter of right valve about 5 mm.	
10. <i>Corbula</i> (<i>Caryocorbula</i>) <i>buenavistana</i> F. Hodson, n. sp.	24
Holotype; left valve. Same specimen as figs. 8 and 13.	
11. <i>Corbula</i> (<i>Caryocorbula</i>) <i>buenavistana</i> F. Hodson, n. sp.	24
Paratype, from near holotype locality; length 17.5 mm., height 11 mm., diameter of left valve 6.2 mm. Same specimen as pl. 8, fig. 6.	
12. <i>Corbula</i> (<i>Caryocorbula</i>) <i>buenavistana</i> F. Hodson, n. sp.	24
Paratype from Loc. No. 91, to show fine concentric sculpture; length 18 mm., height 13 mm., diameter of both valves 10 mm.	
13. <i>Corbula</i> (<i>Caryocorbula</i>) <i>buenavistana</i> F. Hodson, n. sp.	24
Holotype; ventral view. Same specimen as figs. 8 and 10.	

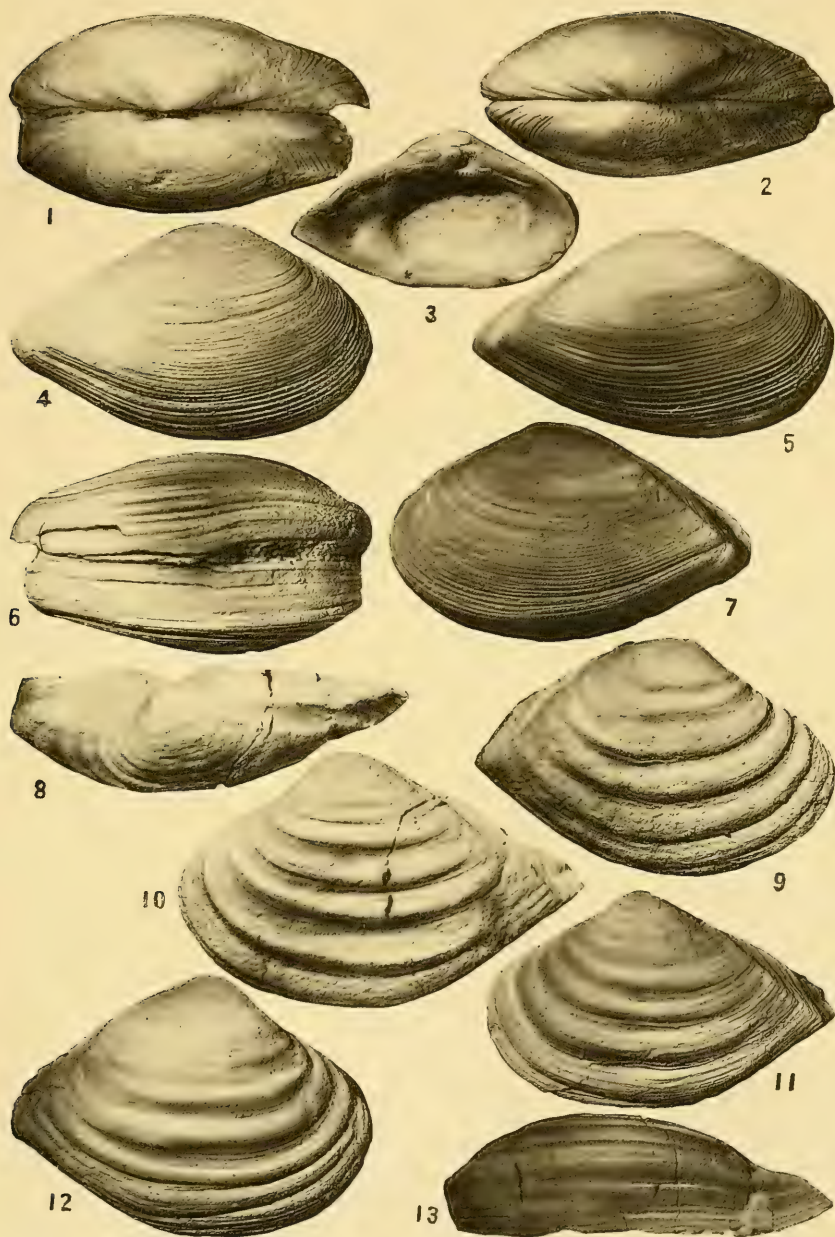




PLATE XIII

PLATE 13

Figure	Page
1. <i>Phos maracaibensis wiedenmayeri</i> F. Hodson, n. subsp.	30
Holotype; length 39 mm., greatest diameter 21 mm. Same specimen as fig. 2.	
2. <i>Phos maracaibensis wiedenmayeri</i> F. Hodson, n. subsp.	30
Holotype. Same specimen as fig. 1.	
3. <i>Phos maracaibensis wiedenmayeri</i> F. Hodson, n. subsp.	30
Paratype, from holotype locality; common weathered appearance; length 39 mm., greatest diameter 22 mm.	
4. <i>Phos maracaibensis wiedenmayeri</i> F. Hodson, n. subsp.	30
Paratype, from near holotype locality; slender variation; length 40 mm., greatest diameter 18.8 mm.	

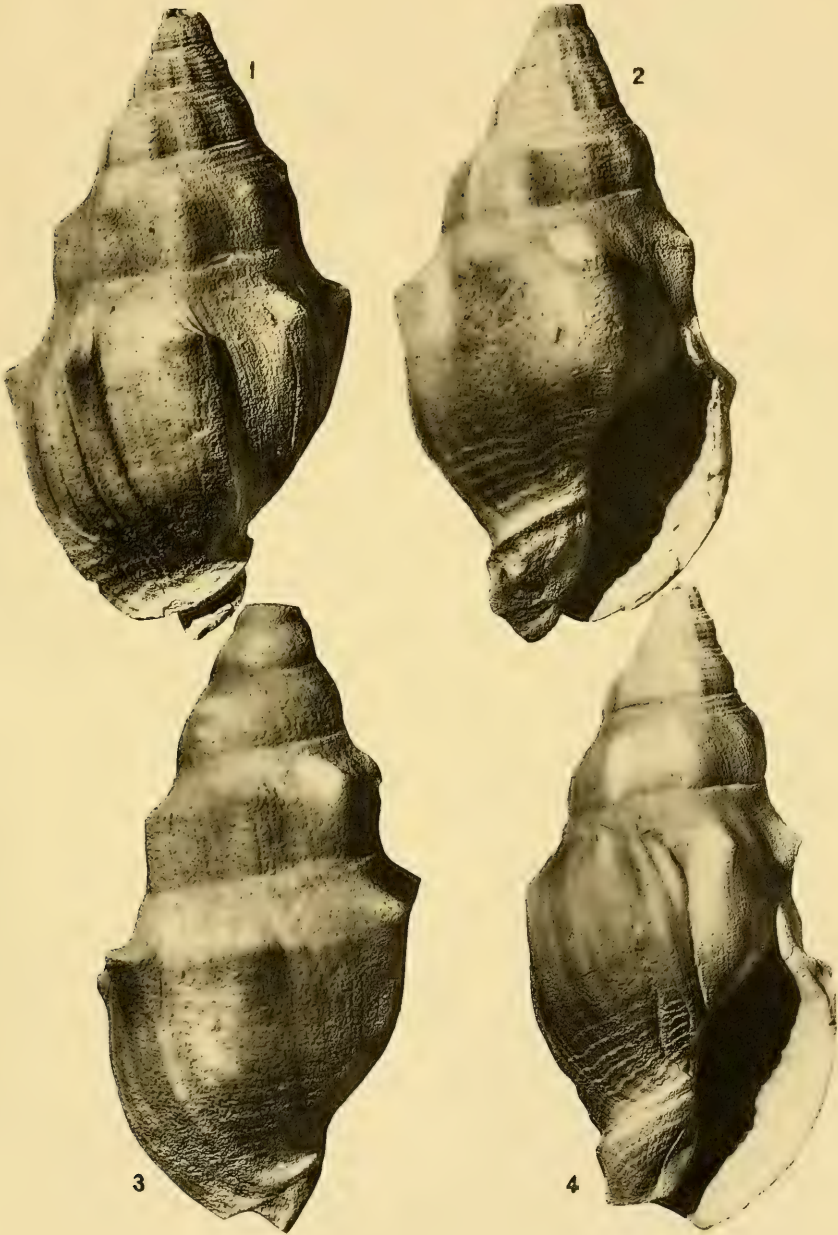


PLATE XIV

PLATE 14

Figure	Page
1. <i>Phos tuberaensis urumacoensis</i> F. Hodson, n. subsp.	31
Holotype; length 40.2 mm., greatest diameter 22.2 mm. Same specimen as fig. 2.	
2. <i>Phos tuberaensis urumacoensis</i> F. Hodson, n. subsp.	31
Holotype. Same specimen as fig. 1.	
3. <i>Phos venezuelensis riocodorensis</i> F. Hodson, n. subsp.	32
Holotype; length 35.5 mm., greatest diameter 19 mm. Same specimen as fig. 4.	
4. <i>Phos venezuelensis riocodorensis</i> F. Hodson, n. subsp.	32
Holotype. Same specimen as fig. 3.	

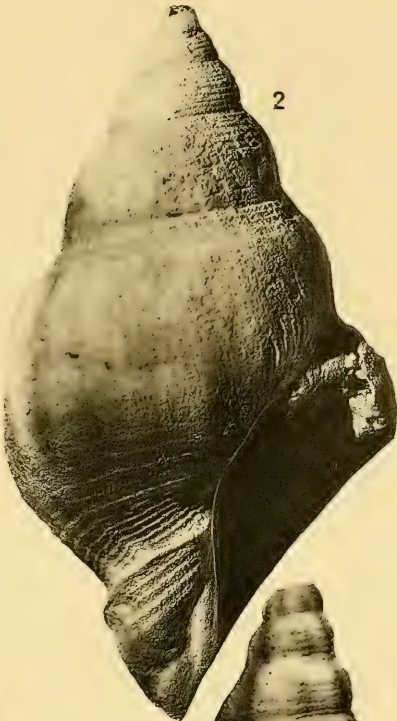


PLATE XV

PLATE 15

Figure	Page
1. Phos (Phos) codorensis F. Hodson, n. sp.	33
Holotype; length 31.6 mm., greatest diameter 16.3 mm. Same specimen as fig. 2.	
2. Phos (Phos) codorensis F. Hodson, n. sp.	33
Holotype. Same specimen as fig. 1.	
3. Phos (Phos) venezuelensis F. Hodson, n. sp.	31
Holotype; length 32.5 mm., greatest diameter 16.3. Same specimen as fig. 6.	
4. Phos (Phos) venezuelensis F. Hodson, n. sp.	31
Paratype, from Loc. No. 2391; length 29 mm., greatest diameter 16.2 mm. Same specimen as fig. 5.	
5. Phos (Phos) venezuelensis F. Hodson, n. sp.	31
Paratype. Same specimen as fig. 4.	
6. Phos (Phos) venezuelensis F. Hodson, n. sp.	31
Holotype. Same specimen as fig. 3.	



PLATE XVI

PLATE 16

Figure	Page
1. <i>Phos (Phos) buchivacoensis</i> F. Hodson, n. sp.	33
Holotype; length 35 mm., greatest diameter 18.5 mm. Same specimen as fig. 4.	
2. <i>Phos (Phos) democraciensis</i> F. Hodson, n. sp.	34
Holotype; length 46.5 mm., greatest diameter 28.5 mm. Same specimen as fig. 3.	
3. <i>Phos (Phos) democraciensis</i> F. Hodson, n. sp.	34
Holotype. Same specimen as fig. 2.	
4. <i>Phos (Phos) buchivacoensis</i> F. Hodson, n. sp.	33
Holotype. Same specimen as fig. 1.	



PLATE XVII

PLATE 17

Figure	Page
1. <i>Phos (Antillophos) paraguayensis</i> F. Hodson, n. sp.	36
Holotype; length 27.3 mm., greatest diameter 13 mm. Same specimen as fig. 5.	
2. <i>Phos (Antillophos) cocoditoensis</i> F. Hodson, n. sp.	35
Holotype; length 29 mm., greatest diameter 15 mm. Same specimen as fig. 3.	
3. <i>Phos (Antillophos) cocoditoensis</i> F. Hodson, n. sp.	35
Holotype. Same specimen as fig. 2.	
4. <i>Phos (Antillophos) cocoditoensis</i> F. Hodson, n. sp.	35
Paratype, from Loc. No. 2207, young specimen; length 19 mm., greatest diameter 10 mm.	
5. <i>Phos (Antillophos) paraguayensis</i> F. Hodson, n. sp.	36
Holotype. Same specimen as fig. 1.	
6. <i>Phos (Phos) falconensis</i> F. Hodson, n. sp.	34
Holotype; length 27 mm., greatest diameter 14 mm. Same specimen as fig. 7.	
7. <i>Phos (Phos) falconensis</i> F. Hodson, n. sp.	34
Holotype. Same specimen as fig. 6.	

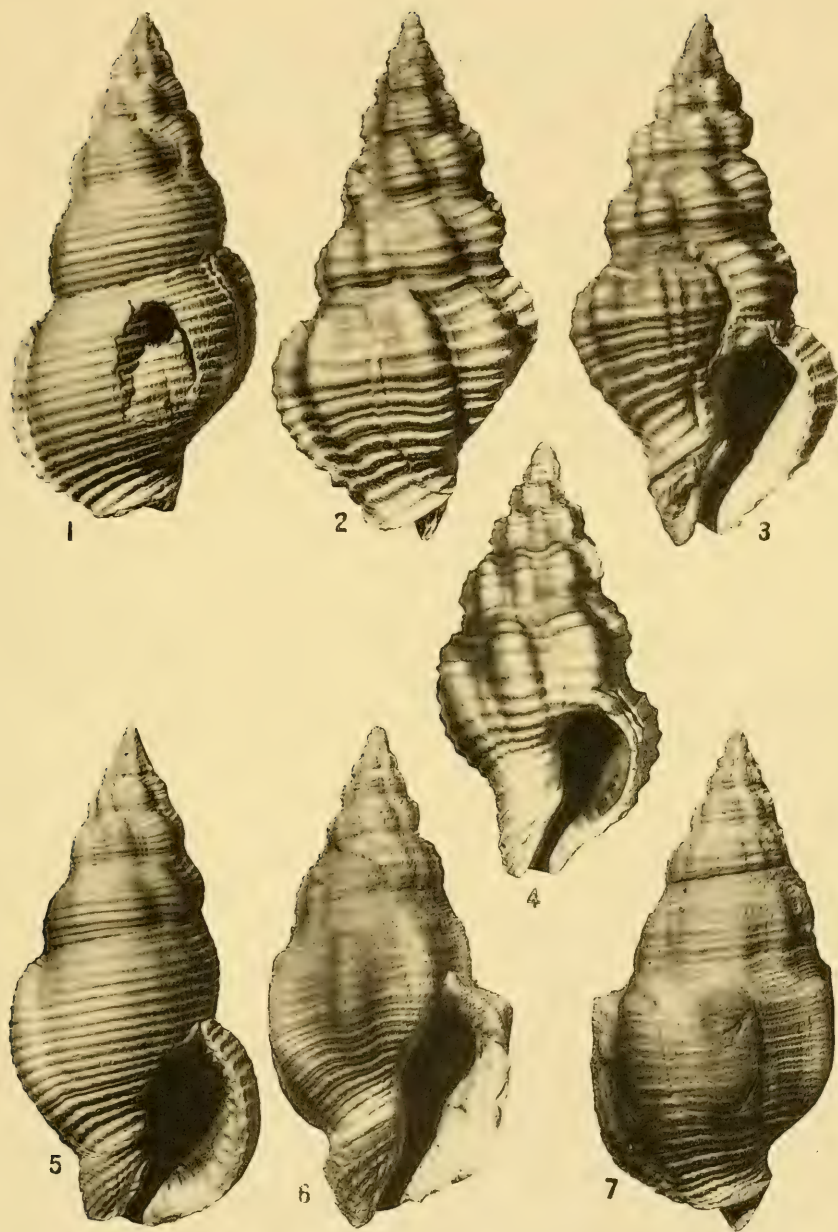


PLATE 2 VIII

PLATE 18

Figure	Page
1. <i>Murex venezuelanus</i> F. Hodson, n. sp.	37
Holotype; length 78.5 mm. (broken), greatest diameter 54 mm.	
2. <i>Cancellaria urumacoensis</i> H. K. Hodson, n. sp.	45
Holotype; length 39 mm., greatest diameter 23 mm.	
3. <i>Cancellaria urumacoensis</i> H. K. Hodson, n. sp.	45
Paratype; from near holotype locality; weathered; length 40 mm., greatest diameter 25 mm.	
4. <i>Cymia buchivacoana</i> H. K. Hodson, n. sp.	38
Holotype; length 66 mm., greatest diameter 48 mm.	



PLATE XIX

PLATE 19

Figure	Page
1. <i>Murex venezuelanus</i> F. Hodson, n. sp.	37
Paratype, from holotype locality; length 48.5 mm. (broken), greatest diameter 30 mm. Same specimen at fig. 3.	
2. <i>Xancus aviaguensis</i> H. K. Hodson, n. sp.	38
Holotype; length 113 mm., greatest diameter 57 mm.	
3. <i>Murex venezuelanus</i> F. Hodson, n. sp.	37
Paratype. Same specimen as fig. 1.	



PLATE XX

PLATE 20

Figure	Page
1. <i>Murex recurvirostris quirosensis</i> F. Hodson, n. subsp.	37
Paratype; from Loc. No. 6, young specimen; length 13 mm., greatest diameter as figured 7 mm.	
2. <i>Murex recurvirostris quirosensis</i> F. Hodson, n. subsp.	37
Holotype; length 32 mm. (tip of anterior canal broken), great- est diameter 20 mm. Same specimen as fig. 5.	
3. <i>Mitra quirosana</i> F. Hodson, n. sp.	42
Holotype, length 22 mm., greatest diameter 7 mm. Same specimen as fig. 4.	
4. <i>Mitra quirosana</i> F. Hodson, n. sp.	42
Holotype. Same specimen as fig. 3.	
5. <i>Murex recurvirostris quirosensis</i> F. Hodson, n. subsp.	37
Holotype. Same specimen as fig. 2.	
6. <i>Mitra dariensis venezuelana</i> F. Hodson, n. subsp.	42
Holotype; length 30.5 mm. (broken), greatest diameter 8.3 mm. Same specimen as fig. 7.	
7. <i>Mitra dariensis venezuelana</i> F. Hodson, n. subsp.	42
Holotype. Same specimen as fig. 6.	

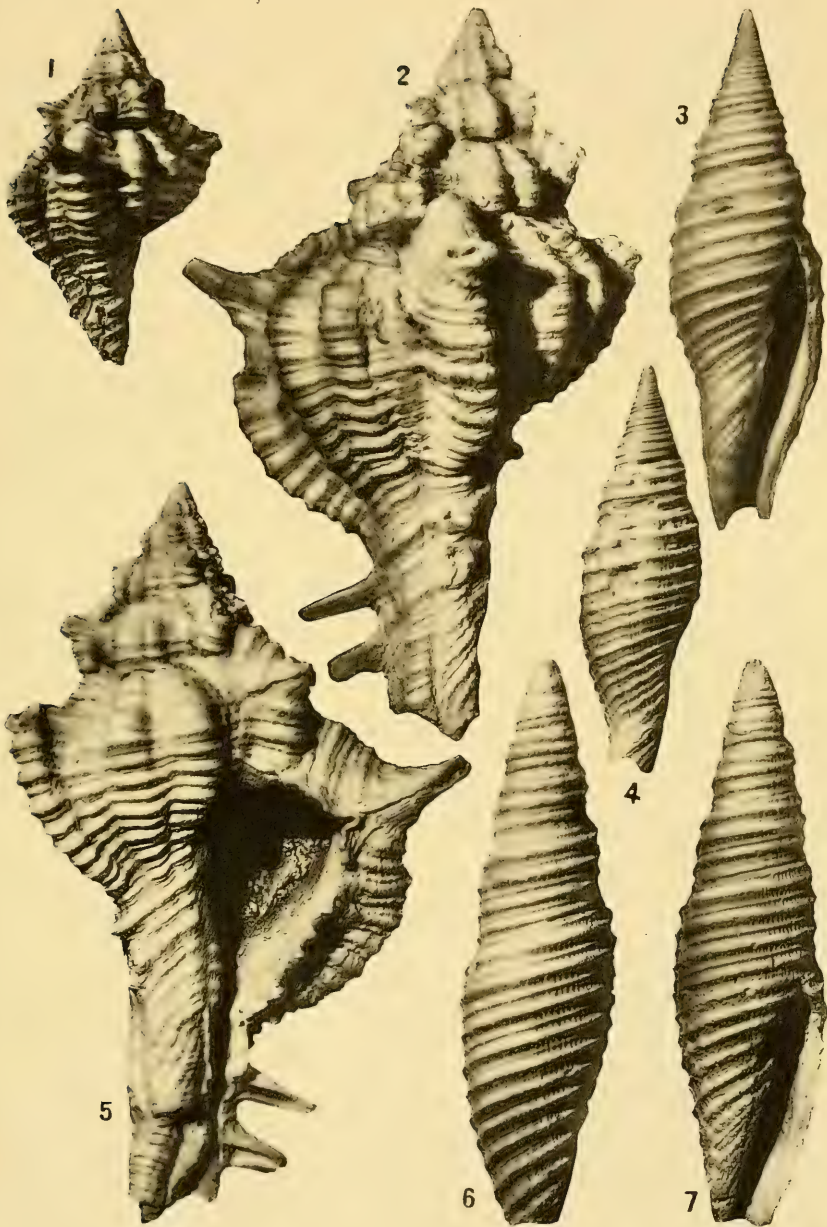


PLATE XXI

PLATE 21

Figure	Page
1. <i>Xancus tirantensis</i> H. K. Hodson, n. sp.	39
Paratype, from holotype locality; young whorls; length of fragment 53 mm., greatest diameter as figured 32 mm.	
2. <i>Xancus tirantensis</i> H. K. Hodson, n. sp.	39
Paratype, from holotype locality; length of fragment 86 mm., greatest diameter as figured 49 mm.	
3. <i>Xancus tirantensis</i> H. K. Hodson, n. sp.	39
Holotype; length of fragment 87 mm., greatest diameter 60 mm.	
4. <i>Xancus colinensis</i> H. K. Hodson, n. sp.	41
Holotype; length 73 mm., greatest diameter 27.7 mm.	



1



2



3



4

PLATE XXII

PLATE 22

Figure	Page
1. <i>Xancus falconensis</i> H. K. Hodson, n. sp.	40
Holotype; length 153 mm., greatest diameter 64 mm.	
2. <i>Cymia buchivacoana</i> H. K. Hodson, n. sp.	38
Paratype, from holotype locality; young specimen with mouth broken back to show columellar fold; length 34 mm., great- est diameter 26 mm.	
3. <i>Xancus falconensis</i> H. K. Hodson, n. sp.	40
Paratype, from holotype locality; length 92 mm., greatest dia- meter 33 mm.	



PLATE XXIII

PLATE 23

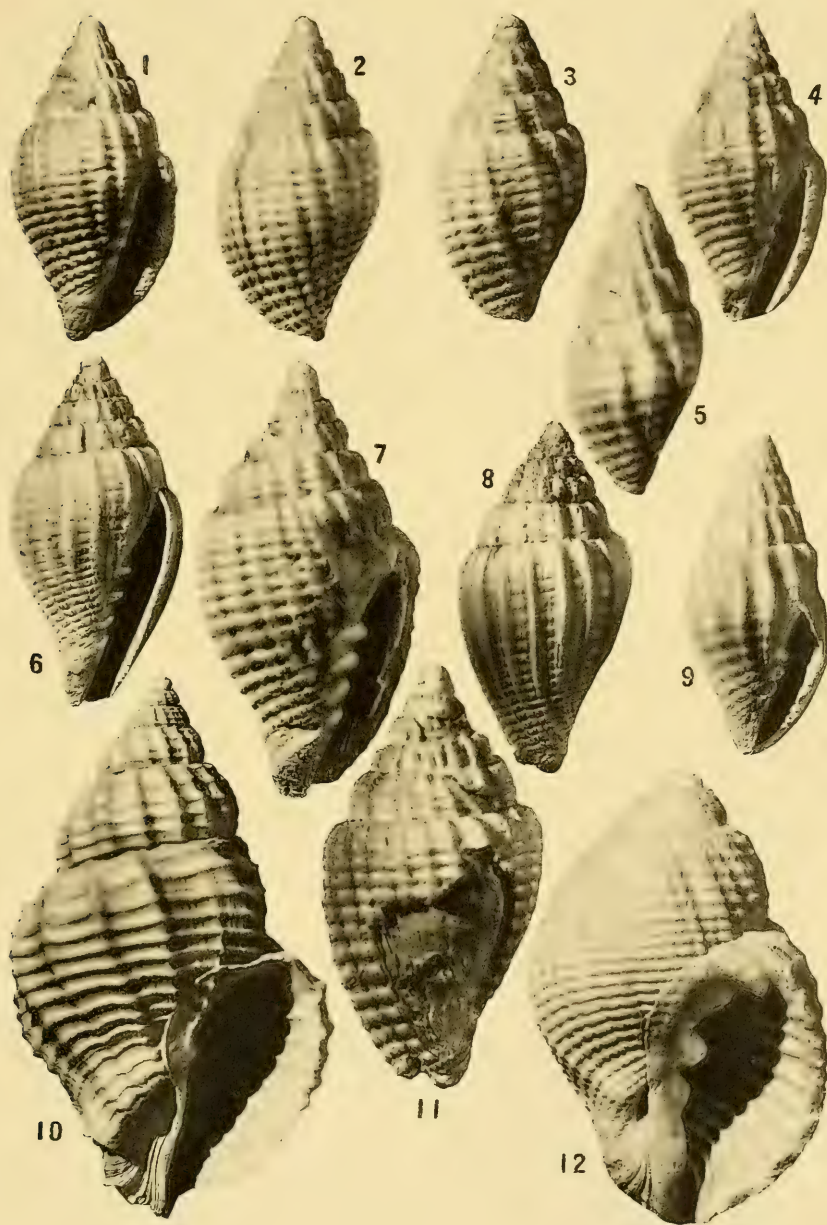
Figure	Page
1. <i>Cancellaria venezuelana</i> H. K. Hodson, n. sp. Holotype; length 34 mm., greatest diameter 24 mm.	45
2. <i>Vasum quirosense</i> F. Hodson, n. sp. Holotype; shell broken, showing columellar folds; length 28.5 mm., greatest diameter 28 mm. Same specimen as figs. 3 and 5.	41
3. <i>Vasum quirosense</i> F. Hodson, n. sp. Holotype. Same specimen as figs. 2 and 5.	41
4. <i>Cancellaria venezuelana</i> H. K. Hodson, n. sp. Paratype, from near holotype locality; variation with whorls not overlapping as much as is typical; length 39 mm., greatest diameter 26 mm.	45
5. <i>Vasum quirosense</i> F. Hodson, n. sp. Holotype. Same specimen as figs. 2 and 3.	41



PLATE XXIV

PLATE 24

Figure	Page
1. <i>Conomitra lavelana</i> F. Hodson, n. sp.	43
Holotype; length 12 mm., greatest diameter 6.4 mm. Same specimen as fig. 2.	
2. <i>Conomitra lavelana</i> F. Hodson, n. sp.	43
Holotype. Same specimen as fig. 1.	
3. <i>Conomitra lavelana</i> F. Hodson, n. sp.	43
Paratype, from Loc. No. 185; length 11.4 mm., greatest diameter 6.2 mm. Same specimen as fig. 4.	
4. <i>Conomitra lavelana</i> F. Hodson, n. sp.	43
Paratype. Same specimen as fig. 3.	
5. <i>Conomitra lavelana falconensis</i> F. Hodson, n. subsp.	43
Holotype; length 10.2 mm., greatest diameter 4.9 mm. Same specimen as fig. 9.	
6. <i>Conomitra weeksi</i> F. Hodson, n. sp.	43
Holotype; length 13 mm., greatest diameter 6.6 mm. Same specimen as fig. 8.	
7. <i>Conomitra lavelana</i> F. Hodson, n. sp.	43
Paratype; from Loc. No. 185; length 15.7 mm., greatest diameter 8.2 mm. Same specimen as fig. 11.	
8. <i>Conomitra weeksi</i> F. Hodson, n. sp.	43
Holotype. Same specimen as fig. 6.	
9. <i>Conomitra lavelana falconensis</i> F. Hodson, n. subsp.	43
Holotype. Same specimen as fig. 5.	
10. <i>Cancellaria paraguensis</i> H. K. Hodson, n. sp.	44
Holotype; length 36 mm., greatest diameter 22 mm.	
11. <i>Conomitra lavelana</i> F. Hodson, n. sp.	43
Paratype. Same specimen as fig. 7.	
12. <i>Cancellaria lavelana</i> H. K. Hodson, n. sp.	44
Holotype; length 20 mm., greatest diameter 13 mm.	



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BULLETINS
OF
AMERICAN PALEONTOLOGY

Vol. 16

*

No. 60

Some Venezuelan Mollusks

Part 2

By
FLOYD HODSON
and
HELEN K. HODSON

November 2, 1931

Harris Co.
Ithaca, N. Y.
U. S. A.

SOME VENEZUELAN MOLLUSKS

BY

FLOYD HODSON

AND

HELEN K. HODSON

PART 2

PREFATORY NOTE

This article is a continuation of the description of Venezuelan mollusks published in previous bulletins.

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DESCRIPTION OF SPECIES

Class PELECYPODA

Family NUCULIDÆ Adams

Genus NUCULA Lamarck

Nucula (?) *paraguanana* F. Hodson, n. sp. Pl. 1, figs. 1, 4, 5

The shell is rather large, somewhat compressed, long, produced anteriorly, and pointed posteriorly. The beaks are small and located near the posterior fourth of the length of the shell. The posterior half of the ventral margin tends to be almost parallel to the anterior dorsal edge of the valves. The shell is smooth but shows concentric lines of growth; there are inconspicuous radial lines although the ventral margins of the valves seem to be smooth; the lunule is wide for its length; the escutcheon is slightly depressed.

The interior of all our specimens is concealed, as it is impossible to separate the valves. Worn specimens show the hinge to be taxodont.

This species is somewhat similar to *N. mancorensis* Olsson¹, but is longer for its height and more pointed posteriorly.

Age.—Lower Miocene.

Holotype Locality.—Cantaura, Cocodito area, District of Falcón, Falcón.

Family OSTREIDÆ Lamarck

Genus OSTREA Linné

Ostrea aguaclarensis paraguanensis F. Hodson, n. subsp.

Pl. 4, fig. 2; pl. 5, fig. 2

The attached valve is deep, about as wide as long and ornamented with about 3 low, broad, radial ribs or plicæ. It has a pronounced lateral depression and flexure as in *O. aguaclarensis* F. Hodson². The margin of the valve shows broad undulations. The upper valve was not found.

This subspecies is the forerunner of the largest *O. aguaclarensis* F. Hodson, which has more pronounced, sharper, radial plicæ.

The matrix is filled with small Nummulites.

¹Bull. Amer. Pal., 1931, vol. 17, pp. 129-130, pl. 2, fig. 8.

²Bull. Amer. Pal., vol. 13, 1927, p. 21, pl. 10, fig. 7; pl. 11, fig. 4; pl. 12, fig. 4.

Age.—Middle Oligocene.

Holotype Locality.—3 kilometers from La Candelaria on road to Cocodito, District of Falcón, Falcón.

***Ostrea disparilis fredeai* F. Hodson, n. subsp.**

Pl. 1, figs. 2, 3;; pl. 2, figs. 1, 2, 3 ; pl. 3, figs. 1, 2, 3, 4.

This Pliocene subspecies differs from *O. disparilis* Conrad³ in tending to be smaller, in having a flatter, less convex, attached valve and in having less imbricate sculpture. In our subspecies, the concentric growth flanges are less pronounced and the radial ornamentation consists of irregular, low, uneven, interrupted or discontinuous ribs; the radial sculpture is very variable when a large series of specimens is examined; in some specimens, there are 3 to 8 radials which are much stronger than the several intervening secondaries; in other specimens, the radial ribs tend to be more uniform in size; or the sculpture may be vermiculate due to fine, irregularly bifurcating ribbing. The ligamental groove usually is twisted to the left (viewing the interior of the attached valve), but in some specimens it is straight and in others it is twisted to the right. The upper valve is flat as in the species, *sensu stricto*, and more feebly sculptured than the attached valve. The inner margin is denticulate near the beaks.

O. sculpta Grzybowski or *O. lunaris* Grzybowski⁴ may be very similar forms, but are not well enough figured to show their relationships.

Named in honor of Mr. M. F. Fredea.

Age.—Pliocene.

Holotype Locality.—Río Seco structure, just south of the town Río Seco, District of Miranda, Falcón.

Family CARDITIDÆ Gill

Genus VENERICARDIA Lamarck

***Venericardia paraguensis* F. Hodson, n. sp.**

Pl. 9, figs. 2, 3

The shell is of medium size, subquadrate, with beaks arched above the hinge line. The posterior slope is somewhat flattened and has about one rib which is smaller and not noded. The shell is ornamented with about 20 sharp, channeled ribs, which are wider than the interspaces; the ribs are channeled on each side

³Medial Tertiary, 1840, p. 51, pl. 26.

⁴Neues Jahr., Beilageband, vol. 12, 1899, pp. 630-631, pl. 17.

with 1 or 2 linear grooves; these linear grooves extend from the ventral margin to the beak; the ribs are crested with rather widely spaced, sharp nodes; the nodes are more rounded and closer together on the anterior part of the shell and more imbricate on the posterior ribs. Anteriorly, the interspaces tend to be somewhat V-shaped and posteriorly to be more rounded. The lunule is very small and very deep.

This species is probably of the same general stock as *V. quirosana* F. Hodson⁵, but is larger and has only 1 instead of 2 weak ribs in the flattened posterior slope.

Age.—Lower Miocene.

Holotype Locality.—Cantaura, Cocodito area, District of Falcón, Falcón.

Family VENERIDÆ Leach

Genus CALLISTA Mörch

Callista maculata quirosana (H. K. Hodson)

Pitaria (*Pitaria*) *quirosana* H. K. Hodson, 1927, Bull. Amer. Pal., vol. 13, pp. 55-56, pl. 32, figs. 2, 5.

This form has the porcelainous shell and biangulate pallial sinus of *Callista*. It is the Oligocene forerunner of *C. (Callista) maculata* (Linné), which ranges from Miocene to Recent. It is abundant at the type locality but does not attain the large size of the species, *sensu stricto*.

Age.—Upper Oligocene.

Holotype Locality.—Loc. 6. Quirós, District of Miranda, Zulia.

Family PSAMMOBIIDÆ Dall

Genus ASAPHIS Modeer

Subgenus ASAPHINOIDES F. Hodson, n. subgenus

The hinge area is flattened and broad. The left valve has 2 cardinals: the anterior is bifid and has a socket in front and behind it, the posterior cardinal is thin and sharp. Laterals are absent on the left valve and probably are lacking on the right. The ligament is partly submerged. The pallial sinus is deep, extending a little beyond the middle of the shell. The shell is ornamented with strong radial ribs.

The right valve has not been found.

Subgenoholotype: *Asaphis* (*Asaphinoides*) *cantaurana* F. Hod-

⁵Bull. Amer. Pal., vol. 13, 1927, pp. 47-48, pl. 29, figs. 8, 12, 13.

son, n. sp.

Asaphis (Asaphinoides) cantaurana F. Hodson, n. sp.

Pl. 5, fig. 1; pl. 6, figs. 1, 2

The shell is of medium size, thin, and has the beak located a little in front of the middle of the shell. The pallial sinus extends a little beyond the middle of the shell to a point just below the beak, the pallial sinus is full and irregularly rounded at its anterior extremity. The anterior cardinal of the left valve is bifid and has a deep socket in front of it and a narrower socket behind it; back of the narrower socket is a narrow cardinal tooth. The ligament is partly submerged. Externally, the left valve is sculptured with sharp radial ribs, much narrower than the interspaces; the posterior radials are much higher and sharper than those on the anterior and develop small hollow spines near the posterior ventral angulation of the valve.

The right valve was not found.

This species seems to be so unique that no similar forms can be compared.

Age.—Lower Miocene.

Holotype Locality.—Cantaura, Cocodito area, District of Falcón, Falcón.

Family TELLINIDÆ Deshayes

Genus METIS H. and A. Adams

Metis colombiensis Wiesbord

Pl. 4, fig. 1

Metis trinitaria colombiensis Weisbord, 1929, Bull. Amer. Pal., vol. 14, p. 256, pl. 40, fig. 6.

This species has not yet been found in Venezuela but is here figured for comparison with the Venezuelan forms *M. falconensis* and *M. barba wiedenmayeri* H. K. Hodson⁶.

Age.—Miocene.

Holotype Locality.—Near Usiacuri, Dept. of Alantico, Colombia.

Class GASTROPODA Cuvier

Family CAPULIDÆ Cuvier

Genus CREPIDULA Lamarck

Crepidula cantaurana F. Hodson, n. sp.

Pl. 6, figs. 3, 4, 5

The shell is rather flat, coiled, and strongly ribbed. On the dorsal side, the coil is not conspicuous; the apex is submarginal;

⁶Bull. Amer. Pal., vol. 16, 1931, pp. 13-15.

the ribs are heavy and bifurcate distally. On the ventral side, the coiling is evident; the aperture is long and rather narrow.

This species has much stronger ornamentations than the Pacific *Crepidula dilatata* Lamarck⁷.

Age.—Lower Miocene.

Holotype Locality.—Cantaura, Cocodito area, District of Falcón, Falcón.

Family TURRITELLIDÆ Gray

Genus TURRITELLA Lamarck

Turritella machapoorensis paraguayensis F. Hodson, n. subsp. Pl. 8, fig. 1

This subspecies differs from *T. machapoorensis* Maury⁸ in having a strong basal carinating spiral cord which forms a keel projecting over the inconspicuous suture; also, in adult forms of this subspecies, the lower of the 2 anterior cords is the larger, while in the species, *sensu stricto*, the upper is the stronger. The young stages of *T. machapoorensis* and this subspecies have 2 strong anterior spiral cords which are about equal. In *T. machapoorensis paraguayensis*, a weaker spiral cord between the 2 strong anterior keels is found in most adult specimens, but is seldom found in the very young stages. Well preserved specimens show numerous, very fine spiral lines on the spiral cords and in the interspaces.

Age.—Lower Miocene.

Holotype Locality.—Cantaura, Cocodito area, District of Falcón, Falcón.

Turritella machapoorensis wiedenmayeri F. Hodson, n. subsp. Pl. 7, figs. 1-4

This subspecies differs from *T. machapoorensis* Maury (*loc. cit.*) in that the adult whorls have 3 basal carinating cords of equal or subequal strength, instead of the 2 found in the type of the species, *sensu stricto*.

This subspecies differs from *T. machapoorensis paraguayensis* (n. subsp.) in having 3 strong anterior carinating spiral cords instead of 2 strong and 1 intercalated weaker one and in having a less overjutting, presutural shoulder. This form does not have as strong a basal carination. Our large adult whorls have about

⁷Histoire Naturelle des Animaux sans Vertebres, 1822, vol. 6, pt. 2, p. 25.

⁸Bull. Amer. Pal., vol. 10, 1925, pp. 386-387, pl. 53, fig. 11.

6 heavy spiral cords back of the 3 stronger anterior keels. The anterior keels in the adult whorls may show numerous nodes.

Named in honor of Dr. C. Wiedenmayer.

Age.—Lower Miocene.

Holotype Locality.—On slope of hill north of Guariro (Guariro is east-southeast of Dabajuro), District of Buchivacoa, Falcón.

Turritella machapoorensis guarirensis F. Hodson, n. subsp.

Pl. 7, fig. 5; pl. 8, fig. 3

The younger stages of this form seem to be very similar to those of *T. machapoorensis* Maury (*loc. cit.*), and hence are of the same general stock, but the adult stages are very distinct. The posterior of the 2 anterior spiral cords becomes the stronger and develops into the main basal keel; this basal keel is scalloped with many knobs or nodes; the number of the knobs varies with the size of the knobs; on whorls about 15 mm. in smallest diameter, there are about 15 larger to about 30 less pronounced knobs; in many specimens all the spirals tend to be noded at the intersections with growth lines. On well preserved specimens, all of the cords and interspaces are covered with submicroscopic spirals.

The variation in ornamentation is very great; when the posterior primary spiral cord is replaced with 2 weaker threads, the whorls are very concave; the relative strength of the basal keels varies, - in some specimens they are subequal, but typically the upper is the dominant one in adult whorls; in some cases, the anterior cord becomes obsolete and in others an intercalated primary spiral is found between the 2 anterior spiral cords.

This subspecies somewhat resembles *T. montañitensis* F. Hodson and its subspecies *saladilloensis* F. Hodson and *olcottii* F. Hodson⁹, which belong to a related stock in which the whorls of the young stages are more concave medially and whose basal cord becomes the main noded keel in the adult stages. *T. machapoorensis* (*sensu stricto*) is not noded.

Age.—Upper Middle Oligocene.

Holotype Locality.—Hill just southwest of Guariro (Guariro is east-southeast of Dabajuro), District of Buchivacoa, Falcón.

⁹Bull. Amer. Pal., vol. 11, 1926, pp. 190-182.

Family THAISIDÆ Dall

Genus CYMIA Mörch

Cymia buchivacoana cantaurana H. K. Hodson, n. subsp. Pl. 10, fig. 1

This new subspecies resembles *C. buchivacoana* H. K. Hodson¹⁰ but has the following differences: its whorls do not lap back so far on those preceding; the sutures are less channeled; the spiral welts in front of the keel on the body whorl are less conspicuous or lacking; the posterior sinus is shallower; the inside of the outer lip carries about 19 long, sharp, liræ, separated by wider grooves, instead of 5 pairs of short liræ; the groove opposite the keel is wider and deeper than the others.

Age.—Lower Miocene.

Holotype Locality.—Cantaura, Cocodito area, District of Falcón, Falcón.

Cymia cocoditana H. K. Hodson, n. sp. Pl. 8, fig. 2; pl. 9, fig. 4

The shell is of medium size and has very fine sculpture behind the keel and coarser sculpture in front of the keel. The youngest whorl preserved is 1.5 mm. in diameter and keeled, it carries 1 spiral thread behind the keel, another spiral thread at the anterior suture, and several longitudinal ribs which form small spines where they cross the spiral sculpture. Fine secondaries gradually appear between the spirals, the longitudinal ribs gradually disappear, and the spines on the keel become larger and farther apart. On the body whorl the spirals behind the keel are inconspicuous; in front of the keel they are numerous and coarse, extending almost to the anterior canal. The anterior canal is lamellose; behind it is a deep constriction. The posterior canal is deep. The inner lip is callused; the outer lip bears a few, wide, indistinct liræ.

This species is obviously distinct from the other 2 Venezuelan species described.

Age.—Lower Miocene.

Holotype Locality.—Cantaura, Cocodito area, District of Falcón, Falcón.

Family BUCCINIDÆ Troschel

Genus SOLENOSTEIRA Dall

Solenosteira falconensis urumacoensis H. K. Hodson, n. subsp. Pl. 9, fig. 1

The shell consists of about 6 similarly sculptured whorls besides the protoconch which is unknown. A sharp carina divides

¹⁰Bull. Amer. Pal., vol. 16, 1931, p. 38, pl. 13, fig. 4; pl. 22, fig. 2.

each whorl into 2 parts which are approximately flat and at right angles to each other; it is located at the posterior third on the body whorl and near the anterior third on the spire whorls, and carries 7-9 spines. The spiral sculpture consists of numerous primary and secondary threads which are strongest in front of the carina on the body whorl; behind the carina, 3 spirals on each whorl are strong while the rest are inconspicuous. The outer lip is thin and broken on every specimen; one shell shows 9-10 liræ on the edge of the inside of the lip between the carina and the anterior canal. The inner lip is callused and smooth except where the callus is thin and reflects the underlying spiral ornamentation.

This new subspecies is distinguished from the Colombian *S. falconensis* Weisbord¹¹ by having 3 strong spirals among the other inconspicuous ones behind the carina instead of numerous primary and secondary threads which are easily visible; by having flat whorls behind the carina instead of concave; and by having straight spines instead of posteriorly recurved spines. All the Venezuelan specimens yet seen are like the subspecies and not like the species, *sensu stricto*.

Age.—Upper Middle Miocene.

Holotype Locality.—In Río Codore, 4.9 kilometers north and 380 meters west of Urumaco, District of Democracia, Falcón.

Family VASIDÆ Adams

Genus XANCUS Bolten

Xancus praeovoideus riosecanus H. K. Hodson, n. subsp.

Pl. 11, fig. 1; pl. 12, fig. 1

This is a large, fat species. The last whorl of the neanic stage is about the youngest one preserved on the present specimens; it carries 7 longitudinal nodes and about 6 primary spiral threads. The transition from the neanic to the adult stage is rather gradual, leaving the first adult whorls with faint primary spirals and in some instances with a poorly developed keel at the edge of the presutural band. The larger whorls are practically smooth, and a large shell has a proportionately greater diameter than a young shell. The columella bears only 3 folds.

¹¹Bull. Amer. Pal., vol. 14, 1929, pp. 277-278, pl. 42, figs. 6-8.

This subspecies is larger and has rounder whorls than *X. falconensis* H. K. Hodson¹². Possibly it is specifically distinct from *X. praeovoides* Maury¹³, but from the few specimens available of both forms, the main difference seems to be the huge size of the Venezuelan form; unless the younger stages of the Venezuelan form are compared with near adult stages of the Santo Domingan form, the relationship is not apparent.

Age.—Near Miocene - Pliocene contact.

Holotype Locality.—3.1 kilometers east and 960 meters north of town of Río Seco, (the town of Río Seco is 17.2 kilometers north and 5.5 kilometers east of Urumaco), District of Miranda, State of Falcón.

¹²Bull. Amer. Pal. vol. 16, 1931, p. 40, pl. 22, figs. 1, 3.

¹³Bull. Amer. Pal., vol. 5, 1917, pp. 247-248, pl. 40, fig. 18.

EXPLANATION OF PLATES

NOTE : Plates furnished by Dr. and Mrs.Hodson.

PLATE 1 (25)

Figure	Page
1. <i>Nucula</i> (?) <i>paraguanana</i> F. Hodson, n. sp.	5
Paratype, from holotype locality; left valve, length 23.5 mm., height 14 mm., diameter of both valves 9 mm.	
2. <i>Ostrea disparilis fredeai</i> F. Hodson, n. subsp.	6
Paratype, from Río Seco. Length 53 mm., height 67 mm., diameter of attached valve 11 mm.	
3. <i>Ostrea disparilis fredeai</i> F. Hodson, n. subsp.	6
Paratype, from Río Seco. Length 38 mm., height 38 mm., diameter of upper valve 5 mm.	
4. <i>Nucula</i> (?) <i>paraguanana</i> F. Hodson, n. sp.	5
Holotype, dorsal view. Length 28 mm., height 15.5 mm., diameter of both valves 10.5 mm. Same specimen as fig. 5.	
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Holotype, right valve. Same specimen as fig. 4.	

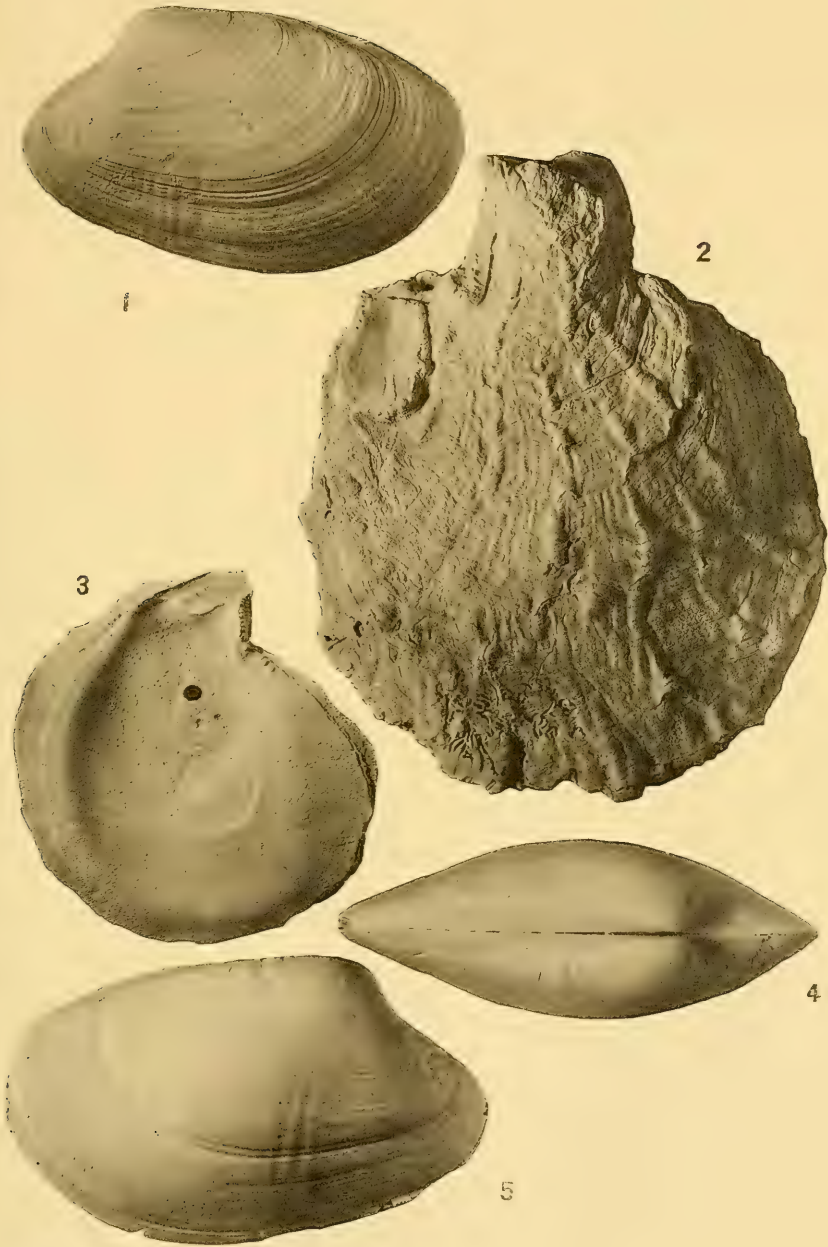


PLATE II

PLATE 2 (26)

Figure	Page
1. <i>Ostrea disparilis fredeai</i> F. Hodson, n. subsp. Paratype, from Río Seco. Length 42 mm., height 41 mm., diameter of attached valve 8 mm.	6
2. <i>Ostrea disparilis fredeai</i> F. Hodson, n. subsp. Paratype, from Río Seco. Length 52 mm., height 57 mm., diameter of attached valve 13 mm.	6
3. <i>Ostrea disparilis fredeai</i> F. Hodson, n. subsp. Paratype, from Río Seco. Length 80 mm., height 92 mm., diameter of attached valve about 18 mm.	6

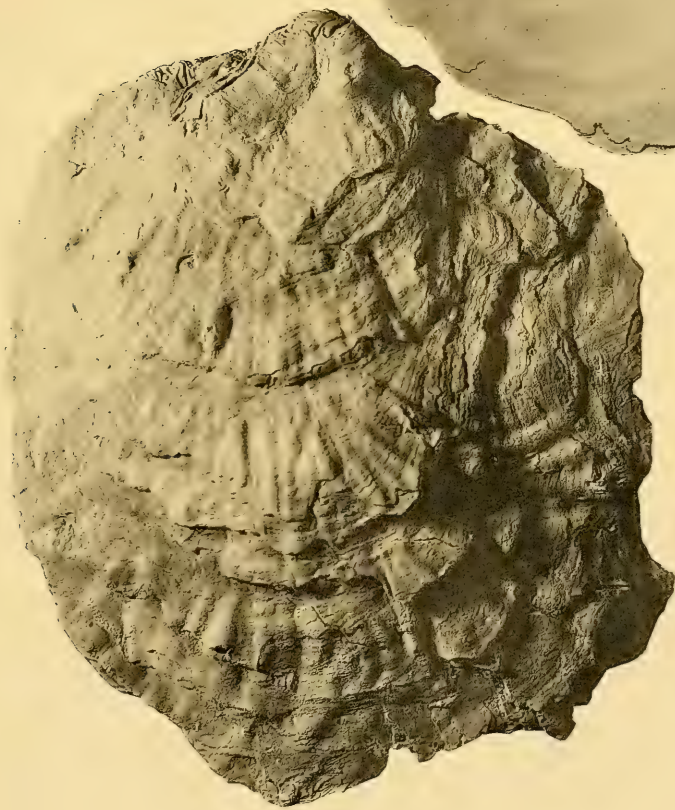


PLATE III

PLATE 3 (27)

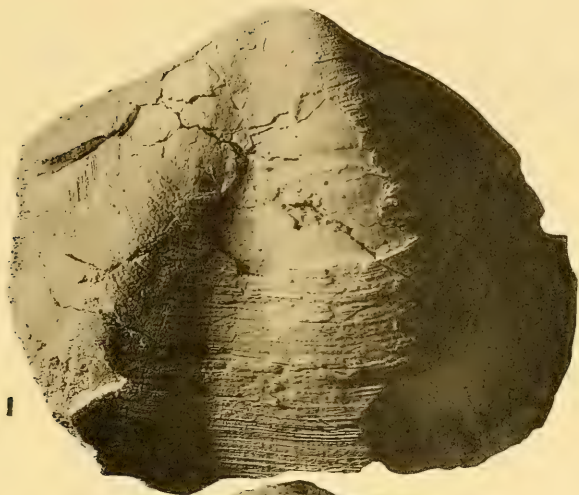
Figure	Page
1. <i>Ostrea disparilis fredeai</i> F. Hodson, n. subsp. Paratype, from Río Seco; ventral view. Length 38 mm., height 35 mm., maximum diameter of both valves about 9 mm.	6
2. <i>Ostrea disparilis fredeai</i> F. Hodson, n. subsp. Holotype, upper valve. Length of upper valve 45 mm., height of upper valve 48 mm., diameter of both valves 16 mm. Same specimen as figs. 3 and 4.	6
3. <i>Ostrea disparilis fredeai</i> F. Hodson, n. subsp. Holotype, attached valve. Length of attached valve 52 mm., height of attached valve 58 mm. Same specimen as figs. 2 and 4.	6
4. <i>Ostrea disparilis fredeai</i> F. Hodson, n. subsp. Holotype, lateral view. Same specimen as figs. 2 and 3.	6



PLATE IV

PLATE 4 (28)

Figure	Page
1. <i>Metis colombiensis</i> Weisbord	8
Holotype, right valve. Length 55 mm. (broken), height 46 mm., diameter of both valves 27 mm.	
2. <i>Ostrea aguaclarensis paraguayensis</i> F. Hodson, n. subsp.	5
Holotype, attached valve. Length 116 mm., height 118 mm., diameter of attached valve 50 mm. Same specimen as pl. 5, fig. 2.	



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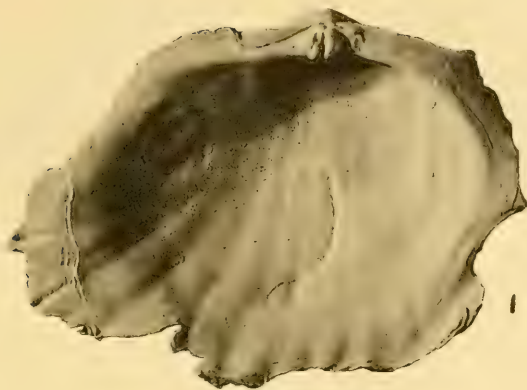


2

PLATE V

PLATE 5 (29)

Figure	Page
1. <i>Asaphis (Asaphinoides) cantaurana</i> F. Hodson, n. sp.	8
Holotype, left valve. Length 30 mm., height 21 mm., diameter 6 mm. Same specimen as pl. 6, figs. 1 and 2.	
2. <i>Ostrea aguacolarensis paraguayensis</i> F. Hodson, n. subsp.	5
Holotype. Same specimen as pl. 4, fig. 2.	



1



2

PLATE VI

PLATE 6 (30)

Figure	Page
1. <i>Asaphis</i> (<i>Asaphinoides</i>) <i>cantaurana</i> F. Hodson, n. sp.	8
Holotype, left valve, dorsal view. Same specimen as fig. 2 and pl. 5, fig. 1.	
2. <i>Asaphis</i> (<i>Asaphinoides</i>) <i>cantaurana</i> F. Hodson, n. sp.	8
Holotype. Same specimen as fig. 1 and pl. 5, fig. 1.	
3. <i>Crepidula cantaurana</i> F. Hodson, n. sp.	8
Holotype. Length 12 mm., greatest diameter 50 mm. Same specimen as figs. 4 and 5.	
4. <i>Crepidula cantaurana</i> F. Hodson, n. sp.	8
Holotype. Same specimen as figs. 3 and 5.	
5. <i>Crepidula cantaurana</i> F. Hodson, n. sp.	8
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PLATE VII

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Figure	Page
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Paratype, from Cerro de Los Tirantes. Length 65 mm., greatest diameter 37 mm.	
2. <i>Turritella machapoorensis wiedenmayeri</i> F. Hodson, n. subsp.	9
Holotype. Length 52 mm., greatest diameter 22 mm.	
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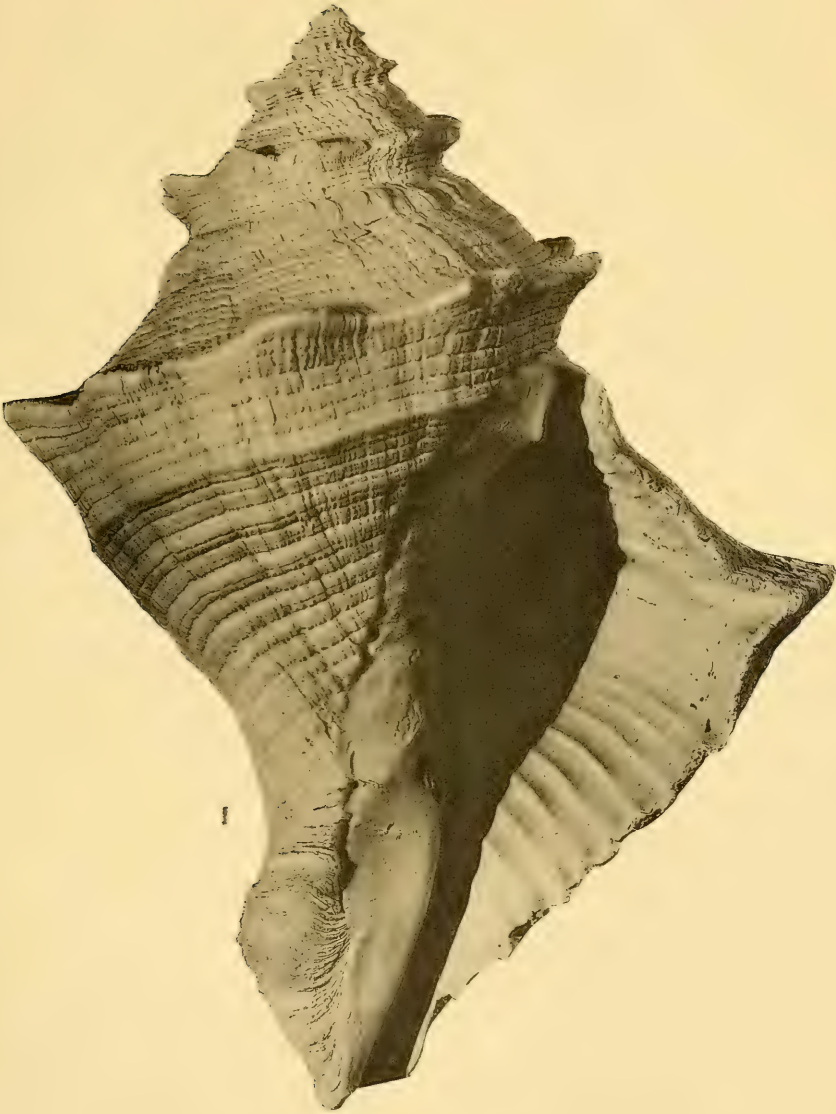


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An Oligocene Rudistid from Trinidad

By
FLOYD HODSON
and
GILBERT D. HARRIS

November 2, 1931

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U. S. A.

AN OLIGOCENE RUDISTID FROM TRINIDAD

BY

F. HODSON AND G. D. HARRIS

PART 3

PREFATORY REMARKS

The finding of Rudistids in the Tertiary, and especially Middle Tertiary, is quite a surprise. The matrix of the rock in which they are found and the internal cavities of the Rudistids contain large numbers of Oligocene Orbitoids, especially of the genera *Lepidocyclina* and *Miogypsina*, so that there can be no suspicion of redeposition; moreover, the nature of the fine sculpture preserved on the Rudistid shells would argue against redeposition.

DESCRIPTION OF

NEW GENUS AND GENOHOLOTYPE

Neomonopleura F. Hodson and Harris, new genus.

The shell has the form and characteristics shown in the accompanying illustrations and is attached by either valve. The attached valve is cup-shaped or strongly twisted; there is no indication of "accessory" cavities; the upper valve is operculate; the shell is rather thin and without canals; the hinge is probably edentulous or the dentition is very feeble as the shell is very thin.

Genoholotype.—*N. wiedenmayeri*, n. sp.

Neomonopleura wiedenmayeri F. Hodson and Harris, n. sp.

Pl. 1, figs. 1-3; pl. 2, figs. 1, 2

The shell is of small or medium size. The attached valve (either right or left) is cup-shaped or strongly twisted (the

specimen selected as holotype was attached by the right valve); the body cavity does not show any "accessory" cavities. The upper valve is operculate. The shell is rather thin and ornamented with fine radial lines crossed by concentric growth lines. The hinge is probably edentulous (or dentition very feeble if present) as the shell is thin. The ligamental groove is not deeply impressed.

The above described specimens are very interesting as they are Middle Tertiary representatives of Rudistids, which were supposed to have been extinct since Cretaceous time.

For a discussion of the associated molluscan fauna, see the chapter on Paleontology by the senior author in Johns Hopkins University Studies in Geology, 1926, p. 108. An abundant fauna of Orbitoid foraminifera is found in the matrix.

Named in honor of Dr. C. Wiedenmayer, who collected the specimen selected as holotype.

Age.—Middle Oligocene.

Holotype Locality.—Morne Diablo Quarry No. 1, Trinidad.

PLATE I

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Holotype, same specimen as fig. 2.	

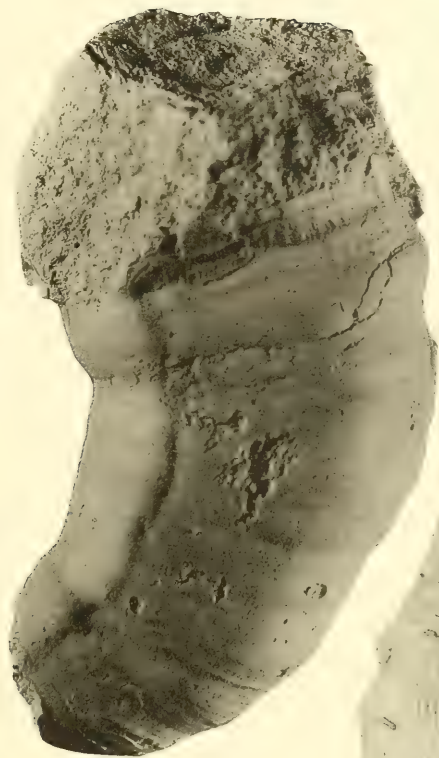


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